WINDOW DRESSING: HIDDEN PRACTICE OF FUND MANAGER IN EQUITY UNIT TRUST FUND MALAYSIA

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DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

(4) The word count of this research report is 13,834.

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LIST OF ABBREVIATIONS

AGE	Age of the Fund
ALPHA	Alpha Return of the Fund
BHRG	Backward Holding Return Gap
CG	Capital Gain
CRFRH	Correlation Between Net Return of the Fund and Net Return of Equity's Holding of the Fund
DVD	Dividend Distribution
EPF	Employee Provident Fund Malaysia
EXPR	Expense Ratio of the Fund
FEM	Fixed Effect Model
FFLOW	Fund Flows
FMS	Fund Manager Skill
HTAYLOR	Hausman Taylor Model
MYR	Malaysia Ringgit
N	Current Number of Equity
NAV	Total Net Asset Value of the Fund
P	Backward Equity's Price
POLS	Poolability Ordinary Least Square Model
PRS	Private Retirement Scheme
r	Net Fee of Return

REH	Return of Equity's Holding
REM	Random Effect Model
RF	Net Return of the Fund
RH	Net Return of Equity's Holding of the Fund
SDEV	Standard Deviation of the Fund
SEC	Security Exchange Commission
TNO	Turnover Ratio of the Fund
w	Weightage of Backward Equity's Holding
WD	Window Dressing

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PREFACE

Window dressing is a hidden practice of covering up the performance of fund by the fund manager. The studies on window dressing is commonly seen in the context in United States of America, however it has not been done in the context of Malaysia. Thus, our study would first detect on the existence of window dressing in Malaysia, along with the determinants of window dressing. Other than that, it is found that window dressing practice could potentially ruins a portfolios' long-term return. Hence our study would continue examining the effect of window dressing on the future performance of the unit trust fund.

The determinants of window dressing are divided into three categories, return of the fund, fund manager behaviour and fund characteristics. As for the effect of window dressing on future fund performance, the determinants are separated into three categories, window dressing, fund manager behaviour and fund characteristics.

Our study expects that the findings could be useful towards future researchers, unit trust fund investor and the regulatory bodies. The proposed methodology of our study helps to raise awareness on the underlying econometric problem that may incur in other researches. Also, the regulatory bodies may develop a more solid regulation on the issue of window dressing.

ABSTRACT

Window dressing is a hidden investment strategy used by fund manager near quarter end or year end to improve the portfolio appearance before disclosing it to the investors and the public. The lowest persistence of unit trust fund return, high entrance fee which conflict with the interest of investors and retirement issue in Malaysia are the problem which might signal the presence of window dressing practice among unit trust fund manager in Malaysia. By using the data of Asia Pacific (Ex-Japan) Unit Trust Fund Malaysia from year 2015 to 2017, our study aims to achieve the following objectives: detect the existence of window dressing, identify the determinants of window dressing and study the effect of window dressing on future fund performance. The introduction of Hausman Taylor model as our methodology helps in overcoming the existence of endogenous variables and time invariant variables. Our finding shows that unit trust fund which is young and has an unfavorable current performance, the fund manager of that unit trust fund would tend to practice window dressing. Window dressing is suggested to cause negative impact on the future performance of fund as well.

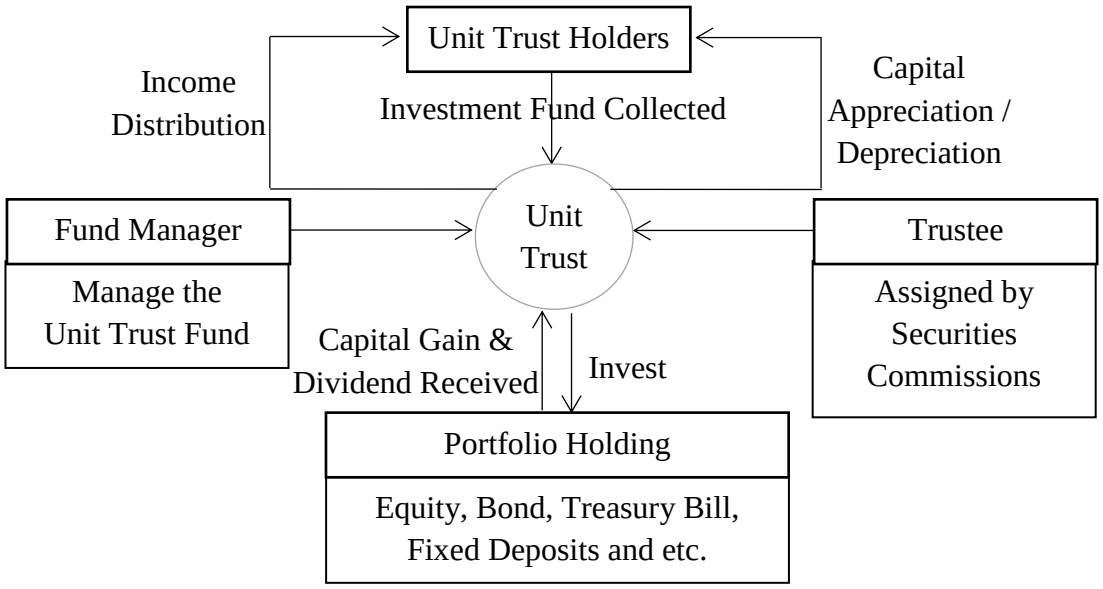
Key Terms: Window Dressing, Unit Trust Fund, Malaysia

CHAPTER 1: INTRODUCTION

1.0 Background of Study

Unit trust fund, also known as mutual fund, is a financial product that allows investors to meet their investment purpose such as capital appreciation and acquire regular income. It gathers investor's investment as a pool, and reinvests the accumulated fund in other financial products, such as equity stock or fixed income assets (Cuthbertson, Nitzche and O'Sullivan, 2016). It is also used to gain benefits such as risk diversification, liquidity, professional management, investment exposure and lower investment cost. Unit trust fund is managed by fund manager in the unit trust fund house or investment bank. A trustee is also assigned by regulatory bodies to hold trust on that unit trust fund. The investors may receive the return from unit trust fund in the form of income distribution and may incur profit or loss based on the capital appreciation or depreciation of unit trust fund based on the performance of the fund manager towards the fund.

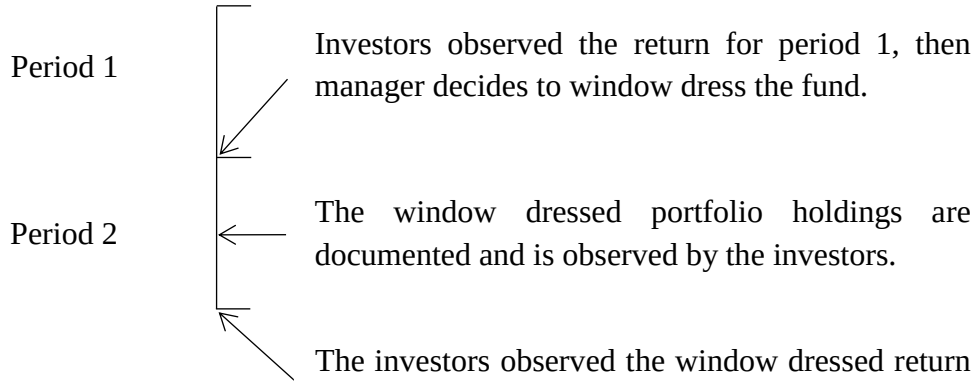
Figure 1.1: Structure of Unit Trust Fund



Adapted from: The Federation of Investment Managers Malaysia, (2010). *Dealing in Unit Trust.*

Figure 1.1 shows the structure of unit trust fund. Although the unit trust fund is highly transparent as the information of the fund could be easily obtained from public resources, but investors do not receive the exact information of the transactions on portfolio holdings conducted by fund manager. Information such as details of tradings and relevant transaction costs on the trades are not disclosed to the public. This hidden information allows the fund manager to have an opportunity on covering up the performance of their fund. This action of covering up the performance of fund is named as window dressing. Window dressing is defined as a hidden investment strategy used by fund manager to alter the portfolio holdings of the fund. This strategy would present a beautified financial report which its short-term performance has been boosted up to mislead and attract investors.

Figure 1.2: Occasion of Window Dressing



Adapted from: Agarwal, V., Gay, G. D., & Ling, L. (2014). Window Dressing in mutual funds. *The Review of Financial Studies 27*, 3133-3170.

Figure 1.2 shows the occasion of window dressing. Window dressing is conducted by trading off deficient performance equities, at the same time trade in satisfactory performance equities. Fund manager could gain benefits such as earning commission from realized profit of equities holding and at the same time, the frequent transaction of equities for window dressing purpose would increase the transaction cost which would impact the return of the fund. Under the current report requirement in United States of America, fund managers could have up to 60 days of delay period before disclosing the portfolio holdings (Agarwal, Gay and Ling, 2011). The fund manager could enhance and improve the short-term performance

of unit trust fund by conducting window dressing in between the delay period before presenting it to the public. The attempt of window dressing allows the fund manager to beautify the performance of unit trust fund and gain benefits from it, and hence misleading the investors' decision on the investment of fund. Other than that, window dressing would also help to raise the overall return in short-term and performs an abnormally high return over a brief period. However, this would trigger a long-term negative effect on the portfolio return (Allen and Saunders, 1992).

As in Malaysia, unit trust fund is one of the most important parts of the investment sector. Till the end of year 2017, the total net asset value of unit trust fund is subjected to MYR 413 billion, and its market capitalization in Bursa Malaysia is up to 22.42% as reported by Securities Commission Malaysia (2018). The types of unit trust fund include money market fund, fixed income fund, balanced fund, exchange traded fund and equity fund (Morningstar, 2018). Money market fund is having the lowest return yet lowest risk among the unit trust fund, followed by fixed income fund, balanced fund, exchange traded fund and equity fund, where equity fund possesses the highest of both return and risk. In addition, unit trust fund in Malaysia has a fixed entrance rate of 5.00% to 5.50% which compromises of certain expense ratio such as management and transaction fees, and agency fees.

Besides that, unit trust fund also allows the investors to have appropriate retirement planning. In Malaysia, as compared to the average annual return of 6% provided by the Employee Provident Fund Malaysia (EPF) (Employee Provident Fund Malaysia, 2018), EPF account holders could invest their EPF fund in unit trust fund, that yields a more promising return, that is up to 25% (iMoney, 2018). EPF allows the account holders to use certain amount in the account 1 of their EPF to invest in qualified unit trust fund, with certain condition applied. Till the end of year 2017, the EPF account holder could use their accumulated fund in their account 1 to invest in 268 qualified unit trust funds (Employee Provident Fund Malaysia, 2018). Other than that, Private Retirement Scheme (PRS) introduced by government in year 2012 also focuses in unit trust fund investment for retirement saving purpose. It encourages investors, especially the youth investors (21 to 30 years old) to invest early-on to accumulate more saving for their retirement with allowance of MYR 1,000 given if

the investor invests MYR 1,000 on it. In addition, PRS could help investors to reduce certain amount of taxes (Private Pension Administrator, 2018).

To manage unit trust fund, fund manager is required to fulfil the competency set by Foundation of Investment Manager Malaysia (FIMM) (Foundation of Investment Manager Malaysia, 2018). Unit trust fund is regulated and bounded by restriction of The Capital Markets and Services Act 2007 in Malaysia. The Guidelines on Reporting Requirements for Fund Manager by Securities Commission Malaysia also gives all fund managers a complete guidance on the administration and element of regulatory to protect the interest of investors. Through the submitted report, Securities Commission Malaysia would be able to govern the unit trust's annual report, periodically financial record and prospectus to make sure unit trust fund is in order. Fund manager in Malaysia could have up to 14 business days of delay period before disclosing the portfolio holdings along with the submitted report. Unit trust fund would also be consigned a trustee so that it would further ensure the reliability of the fund. Other than Securities Commission Malaysia, the unit trust fund is also supervised by Minister of Finance Malaysia, Bursa Malaysia Berhad, and Bursa Malaysia Securities Berhad (Securities Commission Malaysia, 2018).

Evidence of window dressing are mostly documented in countries such as United States of America. Hence, our study would like to extend the study of window dressing in the context of Malaysia. This is due to the lowest persistence of Malaysia's unit trust fund return as compared to other foreign countries as suggested by García, Vidal, Boubaker and Uddin (2016). According to Agarwal et al. (2011), window dressing would bring negative impact to future fund performance, thus the lowest persistence of return in Malaysia could indicates the existence of window dressing.

Table 1.1: Contingency Table Test on Persistence of Countries' Performance

Performance Rank	Country	WW	WL	LW	LL
1	Brazil	68.5%	31.5%	26.0%	74.0%
2	India	63.9%	36.1%	34.5%	65.5%
3	Australia	67.3%	32.7%	40.0%	60.0%
4	Taiwan	66.8%	33.2%	35.6%	64.4%

5	New Zealand	87.3%	12.7%	30.5%	69.5%
6	Denmark	56.8%	43.2%	32.7%	67.3%
7	Thailand	68.4%	31.6%	46.5%	53.5%
8	Indonesia	72.3%	27.7%	53.4%	46.6%
9	Ireland	57.4%	42.6%	21.6%	78.4%
10	Canada	67.3%	32.7%	32.7%	67.3%
11	Italy	74.6%	25.4%	31.2%	68.8%
12	U.S.	69.9%	30.1%	33.6%	66.4%
13	France	64.8%	35.2%	37.1%	62.9%
14	Malaysia	44.0%	56.0%	16.9%	83.1%
15	Norway	73.5%	26.5%	43.5%	56.5%
16	Belgium	63.4%	36.6%	26.8%	73.2%
17	Luxembourg	67.4%	32.6%	31.6%	68.4%
18	Korea (South)	65.7%	34.3%	33.3%	66.7%
19	Finland	67.5%	32.5%	31.1%	68.9%
20	Israel	71.2%	28.8%	40.7%	59.3%
21	Austria	66.6%	33.4%	32.9%	67.1%
22	Germany	71.1%	28.9%	25.5%	74.5%
23	Chile	72.0%	28.0%	28.8%	71.2%
24	Portugal	65.5%	34.5%	33.5%	66.5%
25	U.K.	63.9%	36.1%	43.8%	56.2%
26	Spain	71.0%	29.0%	19.9%	80.1%
27	Singapore	68.4%	31.6%	46.8%	53.2%
28	South Africa	66.8%	33.2%	34.5%	65.5%
29	Hong Kong	67.6%	32.4%	32.6%	67.4%
30	China	78.4%	21.6%	30.9%	69.1%
31	Japan	68.2%	31.8%	50.6%	49.4%
32	Netherlands	65.5%	34.5%	21.6%	78.4%
33	Switzerland	67.3%	32.7%	30.9%	69.1%
34	Poland	65.7%	34.3%	18.4%	81.6%
35	Sweden	58.3%	41.7%	45.7%	54.3%
	All Countries	67.7%	32.7%	33.6%	66.4%

Notes: WW, WL, LW, LL denotes period of win-win, win-lose, lose-win, lose-lose. Win period indicates that period is positive return and lose period indicates that period is negative return. Hence repeat period of win-win indicates the persistence of good return between two investment periods.

Source: García, J. V., Vidal, M., Boubaker, S., & Uddin, S. (2016). The short-term persistence of international mutual fund performance. *Economic Modelling 52(B)*, 926-938.

Table 1.1 shows the contingency table test on persistence of countries' performance by García et al. (2016). Persistence of performance could be defined as the consistency of performance between two investment periods. In their study, the high return of the investments would be constantly high for a brief period. Based on the contingency table test, Malaysia is indicated to have the lowest persistence of positive return between two investment periods due to the lowest value of 44.0%

in the repeating winners period and highest value of repeating losers period 83.1% among the average of 67.7% and 66.4% in most countries respectively. Having a low persistence in return, meanings that the fluctuation of the investment's return would be drastically high over a brief period. The over-active fluctuation of the return is the outcome of actively trading of portfolio holdings by fund manager, and suspected as the indication of window dressing. As implied to our study, Malaysia's fund manager is suspected to have a higher possibility to conduct window dressing.

Table 1.2: Table of Expense Ratio Ranking of Equity Unit Trust Fund Malaysia

Category	No of Fund	Average Expense Ratio	Ranking
ASEAN	9	2.0800	5
Asia Pacific	6	2.2417	4
Asia Pacific ex-Japan	50	2.5902	1
Asia Pacific ex-Japan (Sharia)	24	2.2933	3
Country Focus	33	1.1121	14
Emerging Markets	3	2.4500	2
Global	34	1.7132	8
Greater China	13	1.4677	13
Malaysia Income	18	1.6989	9
Malaysia Large-cap	51	1.6227	12
Malaysia Large-cap (Sharia)	37	1.6965	10
Malaysia Mid/Small-cap	38	1.8711	6
Malaysia Mid/Small-cap (Sharia)	25	1.6964	11
Other	0	0.0000	15
Sector Focus	20	1.8155	7

Notes: There are 15 types of equity unit trust fund available in unit trust fund market Malaysia.
Adapted from: Morningstar, (2018).

Table 1.2 shows the expense ratio ranking of equity unit trust fund Malaysia. According to Kacperczyk, Sialm and Zheng (2008), higher expense ratio is suspected to be the indication of window dressing. This is due to fund managers would actively trade the portfolio holdings to conduct window dressing, causing a relatively high trading cost to occur. Hence according to their study, the fund category that has the highest expense ratio would have higher possibility to occur window dressing. Due to this reason, our study has developed an expense ratio

ranking of equity unit trust fund in Malaysia. Asia Pacific (Ex-Japan) Equity Unit Trust Fund that possess the highest expense ratio among all other categories in Malaysia's equity unit trust fund was selected to conduct the study. According to Morningstar (2018), Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia is a type of portfolios that are mostly holding on equities of Asia Pacific countries and is managed in Malaysia. At the same time, Ex-Japan indicates excluding Japan due to the reason of Japan is a developed country where the risk and return of Japan equity is not fulfilling the requirement of investor. Since this category of fund includes foreign country investment trading, the high expense ratio could be due to this reason.

Studying window dressing comes with a challenge, where it is difficult to identify and measure the window dressing practice based on the institutional trade data (Agarwal et al., 2011). However, inspired by the past research of Kacperczyk et al. (2008), return gap could be used to measure the window dressing of equity unit trust fund because it is formed by using the difference between disclosed portfolio holding return and return of the unit trust fund, and this data sample is able to be collected in Malaysia database. Based on the study by Agarwal et al. (2011), they found several determinants of window dressing. Other than that, as suggested by both Kacperczyk et al. (2008) and Agarwal et al. (2011), there are negative effect of window dressing on future fund performance.

1.1 Problem Statement

Malaysia is in the situation of lowest persistence in terms of satisfactory return among other countries (García et al., 2016). Besides that, unit trust fund in Malaysia possess a fixed rate of 5.00% to 5.50% as entrance fees charged on the investors, which means the investors will lose 5.00% to 5.50% before they begin their investment. The investors need to have high holding power to invest in unit trust fund as they will need longer time to recover this fee from the return. This causes the performance of unit trust funds in Malaysia is not as attractive when compared to the other countries. This arises a problem, why unit trust fund in Malaysia would

possess such higher entrance rate. The reason above leads to our intention to study the existence of window dressing practice by fund manager in Malaysia.

The existence of window dressing practice would bring several consequences. Firstly, fund manager who practiced window dressing could gain benefits such as earn commission from the realized profit of equities holding, this might be an ethical issue for the fund manager in Malaysia. Secondly, it would also bring consequences such as frequent transaction of portfolio holding due to window dressing purpose that would increase the transaction fees and management fees (Agarwal et al., 2011). Thus, investor would need to incur more expenses fee (5.00% to 5.50%) to offset the high expense ratio made by fund manager which would harm the interest of investor as mentioned. This might be the reason of why Malaysia would have such higher entrance rate for unit trust fund. In addition, window dressing practice would mislead the investors' decision due to the short-term abnormal high of return. However, long-term negative impact on unit trust fund's return will be observed because of window dressing, and eventually causes the investors to make loss from their investment.

Window dressing would also bring significant impact to those investors that intends to develop long term planning for their retirement saving. According to Jomo (2016), Malaysians would have difficulties after retirement due to poor return of EPF savings and high inflation factor in Malaysia. They would not be able to maintain their daily expenses until the Malaysian's life expectancy of average 75 years old. Those EPF holders who had invested their EPF fund into unit trust fund, along with the PRS investors would face difficulties on their retirement, as they would not receive the return as promised when they invest in a window dressed unit trust fund. This rises a problem, how Malaysians are going to retire if there are ethical issue of fund manager window dressing the unit trust fund?

Malaysia is considered as semi-strong form of information availability. The investment strategy used by fund manager is not disclosed in public. This lead to a problem where Malaysian could not identify what are the factors that would motivate the fund manager to practice window dressing. Thus, our study would use the public information such as characteristics of unit trust fund to identify the

determinants of window dressing. Moreover, some fund characteristics in Malaysia was reported as time invariant variables. This arises a problem that our study must use a more specific methodology to study window dressing instead of multivariate regression method.

Fund managers in Malaysia could have up to 14 business days of delay period before disclosing their report to the public. If the fund manager is able to practice window dressing in such brief period, this might be a significant issue to Malaysia investment industry. Our study act as the beginning of studying window dressing issue in Malaysia. The result could benefit to the regulation on the window dressing issue as it is yet to be complete and functional, and it is more towards an ethical issue than to a crime. The policy maker needs to investigate the issue of window dressing if it exists, and whether if this issue demands a more thorough process on detecting the misconduct of fund manager. And our study might act as an indication for the policy maker to understand why unit trust fund in Malaysia is having the lowest persistence of satisfactory return among other countries, higher entrance fees which sabotage the interest of investors and the retirement issue in Malaysia.

1.2 Research Question

- Do window dressing practices exist among fund managers under the category of Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia?
- What are the determinants of window dressing under the category of Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia?
- What is the effect of window dressing on future fund performance under the category of Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia?

1.3 Research Objective

1. to detect the existence of window dressing practice among fund managers under the category of Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia.
2. to identify the determinants of window dressing under the category of Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia.
3. to study the effect of window dressing on future fund performance under the category of Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia.

1.4 Significance of Study

First and foremost, our study has encountered the situation where endogenous variable and time invariant variables have taken place. Our study has contributed by proposing a specific methodology approach to tackle such problem. Instead of leading to inconclusive result, it may overcome the limitation of which multivariate regression could not capture. It would be a contribution to future researcher who intends to study on window dressing topic with time invariant and endogenous variables.

Secondly, our study may provide useful information for investor as well. Unit trust fund has become one of the most essential investment which is widely accepted by Malaysian in recent years. This implies that the number of investors investing in unit trust fund for capital appreciation purpose or retirement planning purpose is growing by leaps and bounds. Investor may invest for different purposes whereas all would be gaining a particularized detail about their investments. This is especially crucial for those who invested their EPF in unit trust fund for their retirement planning. In this context, our study would be a remarkable insight for them to identify what are the factors that motivates fund manager to window dress the unit trust fund. Otherwise, they may observe an abnormal return as a result of funds invested are window dressed, causes their retirement saving goals not achievable.

Thirdly, our study may provide a reference and an alert for policymaker on window dressing issue existing in unit trust fund of Malaysia. Successful detection of window dressing activity in Malaysia may draw the attention of all authorities. As a result, everyone could be benefited from the effort of policymaker in existing a sound financial environment.

1.5 Chapter Layout

The chapter layout of our study would be stated as follows. Chapter 2 would be covered with an introduction, together with the literature review on window dressing, determinants of window dressing, effect of window dressing on future fund performance, theory of January/December Effect and Agency Theory towards window dressing, and hypothesis development. Next, the sample data, methodology to measure window dressing, determinants of window dressing and effect of window dressing on future fund performance would best describe our chapter 3. After that, chapter 4 would discuss about descriptive data analysis with its interpretation, existence of window dressing, determinants of window dressing and effect of window dressing on future fund performance. Lastly, a summary of our study would be drawn in last chapter, together with findings remark, implication of study, limitation of study and recommendation.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

In this chapter, critical review on empirical findings done by past studies on three objectives are: (1) Detection of window dressing; (2) Determinants of window dressing; (3) Effect of window dressing on future fund performance. And also, a theory towards window dressing. Two proposed frameworks based on objective (2) and (3) were then constructed based on the past studies. Lastly, motivated by past literature, thereafter comes out with three testable hypotheses.

2.1 Detection of Window Dressing

There are groups of researchers who have done their researches on the topic of window dressing. It is considered challenging on the detection and measurement of window dressing as pointed by past studies. Methodologies used by extant literature on detecting the significance of window dressing in unit trust fund was studied. Basically, Rank Gap measure, Backward Holding Return Gap (BHRG), and Sharpe Test are the measurements used by past studies. Each methodology could come with their own pros and cons.

Based on the research by Agarwal et al. (2011), Rank Gap measure and Backward Holding Return Gap (BHRG) measure are the two measures that were used to identify the existence of window dressing. By adopting these two measures, several findings could be observed. Rank gap measure identifies the presence of window dressing by looking at the discrepancy of fund's ranking on fund performance and holdings of either winner or loser equity, while BHRG could capture the actual fund return by comparing to fund performance of portfolio holdings. Both the measures intend to detect window dressing yet Rank Gap measure could distinguish a skilled

manager from unskilled manager. Equity unit trust funds over the period 1984 to 2008 of United States are the data sample for their research. According to their findings, presence of window dressing would be associated with low rank in winner-loser proportion for poorly performing fund based on the ranking method of rank gap; and vice versa. In other words, if a fund has high ranking in winner-loser proportion, whereas its ranking of fund performance is low, this is an indication of fund manager involved in window dressing. The higher the difference in rank, the higher the possibility of the presence of window dressing. Same goes to BHRG method, which the higher the value of BHRG, the larger the chance of having window dressing practice.

Similar as Agarwal et al. (2011), Kacperczyk et al. (2008) had selected return gap as their measurement. As mentioned before, window dressing is measured by the difference between the actual portfolio holdings return and net investor return. Data sample for this research were extracted from equity unit trust funds in U.S over the period of 1984 to 2003. They found window dressing is prevalence in long run for both winning or losing equities. Though they found it quite trivial for the degree of unobserved actions in aggregate, it is still an effective way to identify unobserved actions which would bring negative impact to investors directly.

On the other hands, by taking 4,025 United States equity unit trust fund from the period of 1997 to 2002 as data set, Meier and Schaumburg (2004) intended to study if there is evidence on window dressing. In this case, Sharpe test is adopted to identify window dressing practice. Similarly, Sharpe test compares the net trade of disclosed portfolio with the difference of investor's return and hypothetical return of portfolio disclosed. In contrast to Rank Gap measure and Backward Holding Return Gap (BHRG) measure stated above, they use average daily return rather than quarterly return. This might generate a more precise result due to availability of high frequency data. From their result, they found approximately 15% of the funds engaged in window dressing at 5% significance level. More specifically, growth fund with high turnover ratio associated with fund managers that performed poorly is likely to engage in window dressing behaviour.

Another research done by Bildersee and Kahn (1987) claimed that window dressing practice of unit trust fund managers are observable and distinguishable as compared to corporate manager which is not discernible. Such behaviour is observable due to its systematic patterns of trading. In their research, trading activities of unit trust fund manager at the quarter-end is investigated. Over-active trading activities would be considered as window dressing practice by the fund manager. Yet, it is hard for investor to justify the practice of window dressing in unit trust fund. In this paper, block trading behaviour was used to test the presence of window dressing. Four major data samples were adopted. Firstly, data was collected from New York Stock Exchange for the period of 1 Jan 1978 to 31 Dec 1984. Besides that, equities that performed extremely good and bad were labelled as winner equities and loser equities respectively. In their research, 21 winners' equity and 30 losers' equity were selected to form a more accurate result. Next, they focus on examining the changes at the quarter-end since window dressing practice is believed to exist before the reporting period. To their concern, since both Fisher Signed-Rank tests and non-parametric Wilcoxon test have eventually come out with the same result. Thus, they adopted that result instead of the others due to abnormal distribution of data for test ratio to be applied. Based on their result, the existence of window dressing behaviour was proven by having all the test results consistent with each other which show that there is abnormal high trading activity at the end of quarter. In addition, window dressing behaviour is likely to occur in the funds which had performed badly in the last period.

2.2 Determinants of Window Dressing

Next, determinants of window dressing have been highly concerned. Numerous literature has identified the factors causing presence of window dressing. Broadly, prior studies have proven that expense ratio, portfolio turnover ratio, correlation between net return of the fund and net return of equity's holding, alpha return of the fund, fund manager skill, fund flows, fund size, total net asset value of the fund, and standard deviation of fund are the determinants found to have relationship with window dressing.

The results from Agarwal et al. (2011) had proven that fund with higher expense ratio would most probably signal the presence of window dressing activity. This is because the behaviour of fund manager buying the equity and dispose it at the end quarter would virtually incur unnecessary cost. Thus, there is a positive relationship between expense ratio and window dressing. Simultaneously, portfolio turnover ratio of a fund could as well be high when expense ratio of a fund is relatively high. Higher turnover ratio may be resulted due to repeating activities of trading in good performance equities and trading off poor performance equities by fund manager at quarter end. Therefore, it shows a positive relationship between turnover ratio and window dressing. Both findings above are exactly consistent with the results generated by Meier and Schaumburg (2004).

On the other hand, Kacperczyk et al. (2008) suggested that high turnover ratio implies a low transparency of fund's trading strategy. It is indicated by correlation coefficient of net return of fund and net return of equity's holding. In this context, low transparency plays a function of signalling the existence of window dressing. Their result has shown a positive relationship between transparency of fund and window dressing.

Besides that, alpha return of the fund has been found having negative relationship with window dressing (Agarwal et al. 2011). This is supported by the researches of Cuthbertson et al. (2016), and Meier and Schaumburg (2004) who highlighted that window dressing is more likely to be associated with funds that had poor past performance. This could best explain that they found manager skill to be negatively related to window dressing. Fund manager with lower ability whom is unskilled, would most probably engaged in window dressing. This is said to be logic as they must window dress to boost up the fund performance to attract potential investors (Cuthbertson et al., 2016). In this context, Brown, Paladino, Wang and Yao (2017) have the same finding that the funds with poor past performance and unskilled fund manager are significant determinants of window dressing.

However, Kacperczyk et al. (2008) have contradictory result with the authors mentioned above. They found no meaningful relationship between expense ratio and portfolio turnover ratio with window dressing. Apart from that, they also found

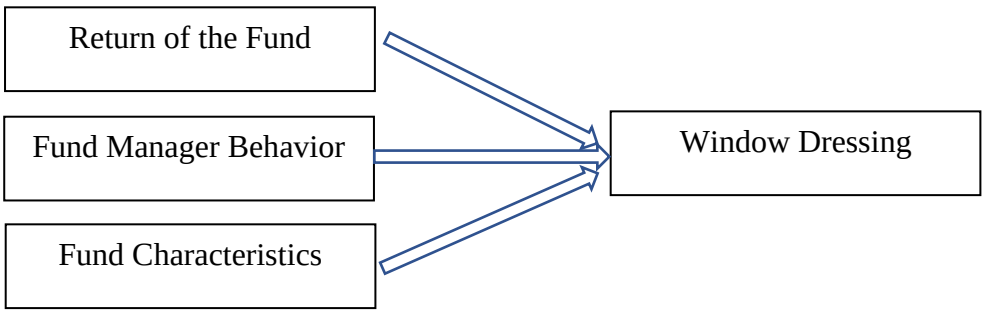
the younger fund would have higher chance to be window dressed. However, it often appears to be insignificant. Furthermore, they noticed a negative relationship between size of fund and window dressing.

Convincing evidence has been provided by Agarwal et al. (2011) which fund flows has absolute relationship with window dressing. As Security Commission requires fund manager to disclose their actual portfolio holdings within 60 days after end of quarter, hence larger fund flows could be observed because of fund manager who attempts to beautify the portfolio than those that could be gained by actual portfolio holdings.

On the other hand, evidence has been shown by Brown et al. (2017) that total net asset value rises among unit trust funds at quarter end. This was supported by a fact that investor relies heavily on balance sheet results when making an investment decision (Bildersee & Kahn, 1987). Fund holdings are mainly used as sales document and that is the motivation and reason of altering the portfolio. Undoubtedly, an attractively packaged portfolio would attract public investment. This implied that total net asset value is positively correlated with window dressing.

Lastly, a finding from Agarwal et al. (2011) illustrated that standard deviation of fund is negatively related to window dressing. Standard deviation in alpha measures the volatility of fund return. Their result shown that an increase of standard deviation in alpha would decrease the likeliness of window dressing. This finding has coupled with their previous findings on bad performed fund and fund manager with poor skill are more inclined to window dress.

Figure 2.1: Proposed Framework of Determinants of Window Dressing



Source: Developed for the study.

Figure 2.1 shows proposed framework of determinants of window dressing. Based on the findings of past studies, those determinants could be classified into few categories to explain a proposed framework of determinants of window dressing. Alpha return could be classified as return of the fund, fund manager skill could be classified as fund manager behaviour and the rest of the determinants could be categorized under fund characteristics.

2.3 Effect of Window Dressing on Future Fund Performance

Here comes to the last major concern which most investor and researchers would like to know. Window dressing known as a value destroying practice would certainly affect future fund performance to some extent. Window dressing, portfolio turnover ratio, fund flows, and expense ratio were found to have impact on future fund performance base on past studies.

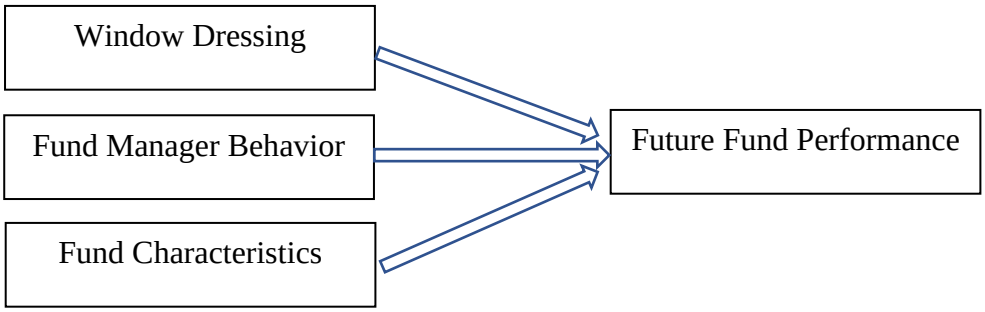
The most essential finding was contributed by Agarwal et al. (2011) that window dressing would adversely affect future fund performance. In way more clarified, future fund performance of window dressed fund would show a drastic drop in the subsequent quarter. As mentioned, window dressing would lead to a poorer future fund performance. However, trading off deficient performance equity and trading in satisfactory performance equity at quarter end could also be considered as a kind of investment strategy adopted by fund manager. Yet, they found that the future performance of fund involved in window dressing would become even worse. Unlike momentum trading strategy which would be resulting in better return. As Security Exchange Commission (SEC) allows fund manager to disclose their portfolio holdings up to 60 days after the end of quarter. Thus, fund managers who did not perform well at current quarter that leads to a low fund flows would grab this opportunity to package their fund. So, fund manager who managed to boost up their performance during the delay period would eventually receive higher fund flows in return. This could be explained as investor may perceive it as a change in fund manager's trading strategy rather than window dressing. Therefore, evidence shows that fund flows is positively related to future fund performance. This is

consistent with the finding of Wang (2012) who shows that window dresser could be benefited by higher fund inflow. Conversely, Chen, Cohen and Lou (2016) found there is a negative relationship between fund flows and future performance. This is similar with the finding from Berk and Green (2004), who claimed that high trading inflow by past winner or past loser equity would lead to dis-economies of scale and lower future fund performance.

Kacperczyk et al. (2008) found that expense ratio of fund tends to affect future fund performance. A negative relationship between expense ratio and fund performance is indicated in their research. Higher expense ratio of fund would lead to relatively low future fund performance. As proven by Agarwal et al. (2011), fund with higher expense ratio is suspected to be a fund associated with window dressing. Such transaction cost is inevitable yet doesn't make any improvement towards fund performance.

As proven by Cuthbertson et al. (2016), portfolio turnover ratio is another determinant affecting future fund performance. It is statistically significant that higher future fund performance would be associated with higher portfolio turnover ratio. This is consistent with the finding of Pástor, Stambaugh and Taylor (2015) who found that future fund performance has positive relationship with portfolio turnover ratio. Such relationship has the highest correlation with funds with smaller fund size and higher expense ratio. This finding provides linkage to another significant finding, the ability of fund manager could affect future fund performance. To be specific, keeping previous well-performed fund manager and dismissing fund manager with unsatisfactory skill could result in a positive movement towards future fund performance. However, fund manager skill is hard to be measured. So, investors are used to judge fund manager skill based on past performance. Typically, investor reacts positively to funds with good past performance. Lastly, result from Agarwal et al. (2011) also shows that the better the fund manager skill, the higher the future fund performance.

Figure 2.2: Proposed Framework Effect of Window Dressing on Future Fund Performance



Source: Developed from the study.

Figure 2.2 shows proposed framework of effect of window dressing on future fund performance. Based on the findings highlighted by past studies, the classification of determinants mentioned in section 2.2 would be same applied on effect of window dressing on future fund performance.

2.4 Theory of January/ December Effect and Agency Theory

The two articles "Window Dressing in Mutual Fund" and "Unobserved Actions of Mutual Funds" proposes that January/December Effect could be potentially explained by the window dressing. The January Effect is a theory arguing that the market is not efficient by certain reasons. This phenomenon is observed since the beginning of 20th century, and the data suggest that the overall performance of all investments in January always having the best performance as compared to the overall market in other months.

In the article "Seasonal Anomalies in Pension Plans", Agency Theory is proposed to be one of the reasons why the managers window dress their portfolio. The Agency Theory is said to be the problem arises due to difference between desire or goal of both investors and portfolio manager. It is submitted in the journal that managers may adapt certain strategies that my harm the interest of investor, for example, sell the fund holding that is having deficient performance, at the same

time buy in the fund that has a superior performance recently to make the portfolio more appealing.

2.5 Hypothesis Development

H_{01}: There is no statistically significant of window dressing in Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia.

H_{A1}: There is statistically significant of window dressing in Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia.

As mentioned in the introduction, the extant literature of this topic has been long existed but there is no study done in Malaysia context so far. Malaysia as one of the developing country in Asia has exhibited impressive performance in economic substantially in recent years. Investment is one of the sectors that drive Malaysia's economic growth. Till the end of year 2017, the total net asset value of unit trust fund is subjected to MYR 413 billion, and its market capitalization in Bursa Malaysia is up to 22.42% as reported by Securities Commission Malaysia (2018). Such notable market capitalization which may exist unobserved issue arouses our interest to conduct a thorough research instead of looking it ostensibly. Thus, before proceeding into other models, our study would like to test if window dressing. practice in unit trust is significant in Malaysia. Thus, our study hypothesized that window dressing is likely to exist in Malaysia and this lead to our second hypothesis.

H_{02}: There is no relationship between independent variable(s) from theoretical argument and window dressing in Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia.

H_{A2}: There is relationship between independent variable(s) from theoretical argument and window dressing in Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia.

Our study suspects there are some independent variables which would attribute to the existence of window dressing in unit trust fund of Malaysia. First, our study

noted that expense ratio of Malaysia is relatively high, however lowest performance persistent of Malaysia among other countries. Thus, our study assumes that higher expense ratio would be an indicator towards existence of window dressing. Higher expense ratio could incur because of fund manager shifting the portfolio holdings at quarter end. Besides that, our study posits that window dressing would be positively affected by fund flows. A larger fund inflow observed in current quarter would be most probably due to the incentive of fund manager to window dress in previous quarter. On the other hand, window dressing is suspected to have negative relationship with current fund performance. Our study presumes that unsatisfactory current fund performance is the biggest factor pushing fund manager to window dresses their portfolio. As window dressing is perceived to be the last resort for fund manager to disclose a beautified portfolio holding to attract investors. This provides a bridge to our next variable which is fund manager skill. Our study tends to infer fund with deficient performance is normally managed by unskilled fund manager. Therefore, fund manager with poor trading skill would be most likely to engage in window dressing. Eventually, our study would like to test on the determinants affecting future fund performance with the presence of window dressing. Thus, leads to the development of our third hypothesis.

H_{03}: There is no relationship between fund manager skill and future fund performance to window dressing in Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia.

H_{A3}: There is positive relationship between fund manager skill and window dressing; There is negative relationship between future fund performance and window dressing in Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia.

Due to the damaging consequences of window dressing practice as mentioned earlier, future fund performance of window dressed fund would be our greater concern. Our study would like to make two presumptions here. First, investors are believed to have reacted smartly towards a window dressed fund by withdrawing their capital. A question arises at this stage, that is, how investor recognizes such practice? Refer to Figure 1.2, investor would observe fund performance instantly at the quarter end (period 1). Next, investor would also recognize it from the performance disclosure during the delay period of 60 days (period 2). If the

performance is good, investor would rather perceive it as a change in trading strategy than window dressing. In this context, our study believes that window dressed fund would be associated with lower future fund performance. This indicates that the investor would most probably reduce their investment in such fund during the next period. Second, since fund manager skill is hard to be measured, investor could only infer managerial skill from their past performance. Therefore, our study posits investor would reward well-skilled fund manager with incremental fund inflow which directly boosts up future fund performance.

CHAPTER 3: METHODOLOGY

3.0 Sample Data

In our study, to answer the three hypotheses development: (1) detect the existence of window dressing in Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia, a measurement of return gap by Kacperczyk et al. (2008) would be used to unveil the hidden investment strategy of fund manager. The methodology used to measure the existence of variable window dressing would be discussed in section 3.1. Then followed by the discuss on the empirical strategy in (2) examining the determinants of window dressing in section 3.2 and the (3) effect of window dressing on future fund performance in section 3.3.

Table 3.1: Table of Sample Data

Fund Code	Fund Data	Time Series Data
AMAAPJD	Advantage Asia Pacific ex Japan Dividend	2015Q1 - 2017Q4
HWAGLOP	Affin Hwang Select Asia (ex Japan) Opportunity Fund	2015Q1 - 2017Q4
HWASCAP	Affin Hwang Select Asia (ex Japan) Quantum Fund	2015Q1 - 2017Q4
AMAPLDV	AmAsia Pacific Leisure Dividend	2015Q1 - 2017Q4
ABMLCUI	AmCumulative Growth	2015Q1 - 2017Q4
APASXJP	Apex Asian (Ex Japan) Fund	2016Q1 - 2017Q4
AMAPEQI	Asia Pacific Equity Income	2015Q1 - 2017Q4
CPASPDI	CIMB - Principal Asia Pacific Dynamic Income Fund	2015Q1 - 2017Q4
SBBAEQF	CIMB - Principal Asian Equity Fund	2015Q1 - 2017Q4
BPTDGFI	CIMB - Principal Equity Growth & Income Fund	2015Q1 - 2017Q4
SBBEQIF	CIMB - Principal Equity Income Fund	2015Q1 - 2017Q4
PRUAPEF	Eastpring Investments Asia Pacific Equity MY Fund	2015Q1 - 2017Q4
HLGAPDV	Hong Leong Asia-Pacific Dividend Fund	2015Q1 - 2017Q4
KAPTRFD	Kenanga Asia Pacific Total Return Fund	2015Q1 - 2017Q4
AVECLAS	Libra Consumer and Leisure Asia Fund	2015Q1 - 2017Q4
PACF018	Pacific Focus18 Fund	2015Q1 - 2017Q4
PACGAIR	Pacific Global Agriculture, Infrastructure& Resources Fund	2015Q1 - 2017Q4

PHASEJP	Pheim Asia Ex-Japan Fund	2015Q1 - 2017Q4
OSKASGO	RHB Asian Growth Opportunities Fund	2015Q1 - 2017Q4
OSKUOBE	RHB Equity Trust	2015Q1 - 2017Q4
SAFFSAM	Singular Asia Flexible Fund	2015Q1 - 2017Q4
TAABNUT	TA Asian Dividend Income Fund	2015Q1 - 2017Q4

Adapted from: Morningstar, (2018).

Table 3.1 shows the sample data of our study. Quarterly data for variables from year 2015 to 2017 under Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia are directly collected from Bloomberg Terminal. This indicates our data set would be panel data which compromises cross sectional data and time series data (i = 22 funds from Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia; t = 12 quarters from year 2015 to 2017). Only 22 out of 50 funds are collected because some data are not available between the periods of 2015-2017. Besides that, fund code APASXJP has missing data in year 2015, thus causes our study to become unbalanced panel data (260 observations for each variable).

3.1 Measurement of Window Dressing

Follow the work of Kacperczyk et al. (2008), our study uses return gap to measure window dressing.

$$WD_{i,t} = RF_{i,t} - RH_{i,t} - EXPR_{i,t} \quad (1)$$

Equation (1) shows the measurement of window dressing (return gap). Window dressing (*WD*) (percentage point) is measured by net return of the fund (*RF*) minus out net return of equity's holding in the fund (*RH*) and expense ratio of the fund (*EXPR*).

$$RF_{i,t} = (NAV_{i,t} + CG_{i,t} + DVD_{i,t} - NAV_{i,t-1}) / NAV_{i,t-1} \quad (2)$$

$$RH_{i,t} = \sum w^{f}_{i,\tau} REH^{f}_{i,t} \quad (3)$$

Equation (2) shows the measurement of net return of the fund (*RF*), it was derived based on total net asset value and includes capital gains (*CG*) and dividend distribution of the fund (*DVD*). Next, equation (3) shows the measurement of net return of equity's holding in the fund (*RH*), it was derived from the sum of multiplication between weightage of backward equity's holding (*w*) and current return of equity's holding (*REH*).

$$w^{f}_{i,\tau} = (N^{f}_{i,t} P^{f}_{i,t-1}) / \sum (N^{f}_{i,t} P^{f}_{i,t-1}) \quad (4)$$

Equation (4) shows the measurement of weightage of backward equity's holding, it was derived based on multiplication between current number of equity (*N*) and backward equity's price (*P*) of the equity. In addition, since our target sample is foreign equity investment fund, some of the equity's price collected is denominated by foreign currency, thus our study would convert the foreign currency into Malaysia Ringgit currency value based on the rate provided by Bank Negara Malaysia (refer to Appendix 1.0).

Next, a significance test based on *t*-statistics would be conducted to test the existence of window dressing in Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia. The test is conducted based on null hypothesis of insignificant (H_0: $WD = 0$) with its opposite alternative hypothesis of significant (H_A: $WD \neq 0$). If the upper critical value is greater than computed *t*-statistic or lower bound critical value is lower than computed *t*-statistic, reject the null hypothesis. The computation of t-statistics shows as follows:

$$t_{(\alpha,d.f.)} = WD_t - WD_{mean} / Standard\ Deviation\ of\ WD$$

The measurement of Kacperczyk's return gap would be able to capture the unobserved behaviours of fund including costs and benefits to fund manager. Higher value in return gap indicates there are higher possibility window dressing practice.

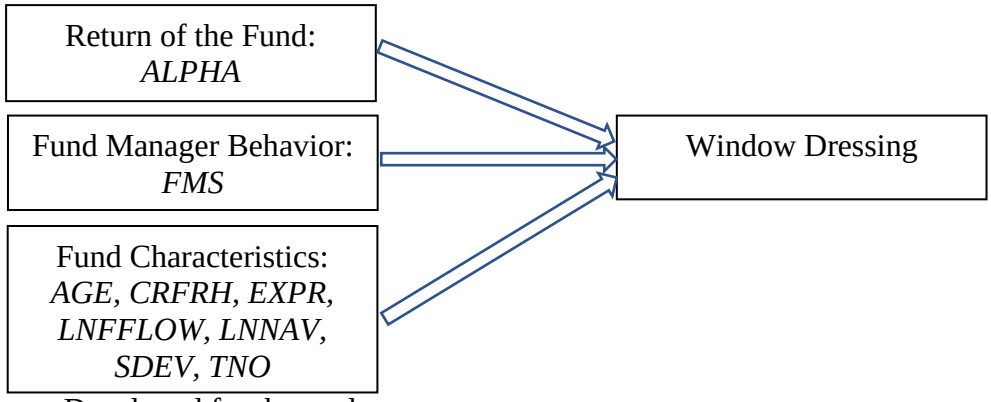
3.2 Determinants of Window Dressing

Based on proposed framework in section 2.2, the determinants of window dressing which would motivate fund manager to window dressing are return of the fund, fund manager behaviour and fund characteristics. Return of the fund is using variable *ALPHA*, fund manager behaviour is using variable *FMS* and fund characteristics is using variables *AGE*, *CRFRH*, *EXPR*, *FFLOW*, *NAV*, *SDEV*, and *TNO*. The determinants of window dressing could be expressed as:

$$LNWD = f\,(AGE, ALPHA, CRFRH, EXPR, LNFFLOW, FMS, LNNAV, SDEV, TNO) \quad (5)$$

Where *LN* denotes natural logarithms.

Figure 3.1: Framework of Determinants of Window Dressing



Source: Developed for the study.

Figure 3.1 shows the framework of determinants of window dressing in our study. According to the definition of Bloomberg, age of the fund (*AGE*) (year) could be defined as the period of unit trust fund existing in the market since its inception date.; alpha return (*ALPHA*) (percentage point) could be defined as the current performance of the unit trust fund against its market performance benchmark.; Expense ratio (*EXPR*) (percentage point) could be defined as annual charging fee to portfolio's holder, which include portfolio's management and administrative fees, and other portfolio-based fees incurred by the fund.; Total net asset value (*NAV*) (Ringgit Malaysia) could be defined as the value per unit of unit trust fund on a

specific date, it represents the total value of all equities holding in the fund.; Standard deviation (*SDEV*) (standard deviation value index) could be defined as the volatility of return performance of unit trust fund.; Turnover ratio (*TNO*) (percentage point) could be defined as the average change of equity holding based on the trading activity of fund manager.

The measurement of fund manager skill (*FMS*) (percentage point) was inspired by Agarwal et al. (2011), net return of the fund (*RF*) minus out net return of the equity's holding of the fund (*RH)*. Higher fund manager skill in value indicates better skill level of fund manager in managing the portfolio's return. According to the definition of Kacperczyk et al. (2008), correlation between net return of the fund and net return of equity's holding of the fund (*CRFRH*) (correlation value index) could be defined as the transparency of fund manager's investment strategy.

$$FFLOW = [NAV_t - NAV_{t-1}(1+r)] / NAV_{t-1} \quad (6)$$

Equation (6) shows the definition of fund flows by Agarwal et al. (2011), fund flows (*FFLOW*) (fund flows value index) could be defined as net cash flows of unit trust fund, where the net fee of return (*r*) has considered.

In our study, to estimate the determinants of window dressing as in equation (5), our study uses unbalanced panel data of i = 22 funds from Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia with t = quarter data from year 2015 to 2017. According to (Hauser, n.d.), when the data set compromises of cross section and time series, the data must have pooled together to run a Poolability Ordinary Least Squares (POLS) regression model test. Hence, by using POLS, our study estimate equation (5) as:

$$\begin{aligned} LNWD_{i,tv} = {} & \alpha_0 + \alpha_1 AGE_{i,tv} + \alpha_2 ALPHA_{i,tv} + \alpha_3 CRFRH_{i,ti} + \alpha_4 \\ & EXPR_{i,ti} + \alpha_5 LNFFLOW_{i,tv} + \alpha_6 FMS_{i,tv} + \alpha_7 \\ & LNNAV_{i,tv} + \alpha_8 SDEV_{i,tv} + \alpha_9 TNO_{i,ti} + \alpha_{10} TIME \\ & Dummy + \varepsilon_{it} \end{aligned} \quad (7)$$

Where *tv* denotes time variant variable and *ti* denotes time invariant variable. From the past study of Agarwal et al. (2011) and Kacperczyk et al. (2008), *AGE*, *ALPHA* and *FMS* share negative relationship with window dressing, and our study expects: $\alpha\ AGE < 0$, $\alpha\ ALPHA < 0$ and $\alpha\ FMS < 0$. This is because younger fund has smaller fund size and insignificant performance return to present to the public, thus some fund manager might need to window dress the fund to misleading and attract the investor to increase the fund size. Besides that, fund manager who possess poor skill in investment strategy would lead to deficient performance return. Hence, these two factors would motivate fund manager to window dress the portfolio.

However, *CRFRH*, *EXPR*, *FFLOW*, *NAV*, *SDEV* and *TNO* share positive relationship with window dressing, where our study expects: $\alpha\ CRFRH > 0$, $\alpha\ EXPR > 0$, $\alpha\ FFLOW > 0$, $\alpha\ NAV > 0$, $\alpha\ SDEV > 0$ and $\alpha\ TNO > 0$. This is because *CRFRH* could measure transparency of fund manager's investment strategy, lower correlation indicates more hidden investment strategy. However, the positive relationship between *CRFRH* and window dressing might be due to agency problem instead of transparency of fund manager's investment strategy (Kacperczyk et al., 2008). Higher expense ratio would signal the presence of window dressing activity because the trading behaviour of fund manager at the end quarter would virtually incur unnecessary cost. According to the requirement of Securities Commission, fund manager must disclose their actual portfolio holdings within delay period, hence larger fund flows could be the sign of fund manager attempts to beautify the portfolio. Total net asset value has positive relationship with window dressing because total net asset value most of the time would rises at the quarter end. Investor relies heavily on balance sheet results when deciding an investment (Bildersee & Kahn, 1987), thus an attractively beautified portfolio would attract public investment. The increase in standard deviation of fund might due to the great distinct in return of equity's holding, thus fund manager would tend to beautify the portfolio and involve in window dressing. Higher turnover ratio indicates frequent trading activities of trading in satisfactory performance equities and trading off deficient performance equities. Thus, this strategy indicates the fund manager has involved in window dressing.

Assume there is no unobserved individual effect (heteroscedasticity) and time effect (pure correlation) in the error term. Given that the diversity of equity unit trust fund, our study expect that such assumptions would be violated. Therefore, our study relaxes such assumption and introduce the use of Fixed Effect Model (FEM) and Random Effect Model (REM). Hence, by using FEM and REM, our study estimate equation (5) as:

Fixed Effect Model:

$$\begin{aligned} LNWD_{i,tv} = {} & \alpha_{0,i,t} + \alpha_1 AGE_{i,tv} + \alpha_2 ALPHA_{i,tv} + \alpha_3 CRFRH_{i,ti} + \alpha_4 \\ & EXPR_{i,ti} + \alpha_5 LNFFLOW_{i,tv} + \alpha_6 FMS_{i,tv} + \alpha_7 \\ & LNNAV_{i,tv} + \alpha_8 SDEV_{i,tv} + \alpha_9 TNO_{i,ti} + \alpha_{10} TIME \\ & Dummy + e_{it} \; where \; e_{it} \sim^{iid} N(0,1) \end{aligned} \tag{8}$$

Random Effect Model:

$$\begin{aligned} LNWD_{i,tv} = {} & \alpha_{0,t} + \alpha_1 AGE_{i,tv} + \alpha_2 ALPHA_{i,tv} + \alpha_3 CRFRH_{i,ti} + \alpha_4 \\ & EXPR_{i,ti} + \alpha_5 LNFFLOW_{i,tv} + \alpha_6 FMS_{i,tv} + \alpha_7 \\ & LNNAV_{i,tv} + \alpha_8 SDEV_{i,tv} + \alpha_9 TNO_{i,ti} + \alpha_{10} TIME \\ & Dummy + v_{it} \; where \; v_{it} = e_{it} + u_i \end{aligned} \tag{9}$$

The constant in FEM has captured the individual and time effect. Besides that, the constant in REM has captured the time effect. The test is based on null hypothesis of no relationship (H_0: There are no relationship between independent variables and window dressing.) with its opposite alternative hypothesis of relationship (H_A: There are relationship between independent variables and window dressing.). After that, a regression model selecting test would be conducted to select which regression model is the best model to describe our results. The selecting test includes poolability *F*-test, Breusch & Pagan test, and Hausman test (Hauser, n.d.).

The poolability *F*-test is based on null hypothesis of preferable (H_0: POLS is preferred) with its opposite alternative hypothesis of preferable (H_A: FEM is preferred). The *F*-test suggest all individual effect in error term would be equal to

zero. If the critical value is greater than computed *F*-statistic, reject the null hypothesis. The computation of *F*-statistic shows as follows:

$$F_{(\alpha,\ d.f.1,\ d.f.2)} = [\ {}^{K}\textstyle\sum_{i=1} n_i\ (X_i - X) / (K\text{-}1)\ ] / [\ {}^{K}\textstyle\sum_{i=1}{}^{ni}\sum_{j=1} (X_{i,j} - X_i)^2 / (N - K)\ ]$$

The Breusch & Pagan Lagrangian Multiplier test is based on null hypothesis of preferable (H_0: POLS is preferred) with its opposite alternative hypothesis of preferable (H_A: REM is preferred). The *LM*-test suggest the variance of error term would be equal to zero. If the critical value is greater than computed *LM*-statistic, reject the null hypothesis. The computation of *LM*-statistic shows as follows:

$$LM_{(\alpha,\ d.f.)} = nR^2$$

The Hausman test is based on null hypothesis of preferable (H_0: REM is preferred) with its opposite alternative hypothesis of preferable (H_A: FEM is preferred). The X^2-test suggest that there is difference in coefficients which is not systematic. If the critical value is greater than computed X^2-statistic, reject the null hypothesis. The computation of X^2-statistic shows as follows:

$$X^2_{(\alpha,\ r\text{-}1,\ c\text{-}1)} = {}^{k}\textstyle\sum_{i=1} [\ (x_i - m_i)^2 / m_i\ ]$$

Table 3.2: Table of Equation (5) Variable Classification

Variables	Exogenous	Endogenous
Time Variant	*AGE*	*ALPHA*
	FFLOW	*WD*
	FMS	
	NAV	
	SDEV	
Time Invariant	*CRFRH*	
	EXPR	
	TNO	

Source: Developed for the study.

However, there is an issue of endogenous problem between window dressing and alpha return. Table 3.2 shows the table of equation (5) variable classification. As alpha return is the independent variable in determinants of window dressing model,

at the same time it is also a dependent variable in the effect of window dressing on future fund performance model. Besides that, there are a few time invariant variables such as *CRFRH*, *EXPR* and *TNO*. Hence, a better regression test proposed by Hausman and Taylor (1981) known as Hausman Taylor regression model (HTAYLOR) test is adopted in our study for a better result. This is because ordinary least squares' coefficient has a drawback, where all the time invariant variables are excluded by ''fixed effects'' estimators or ''within groups'' estimators (Hausman & Taylor, 1981). Hence, by using HTAYLOR, our study estimate equation (5) as:

$$\begin{aligned} LNWD_{i,tv,endo} = {} & \alpha_0 + \alpha_1 AGE_{i,tv,exo} + \alpha_2 ALPHA_{i,tv,endo} + \alpha_3 CRFRH_{i,ti,exo} \\ & + \alpha_4 EXPR_{i,ti,exo} + \alpha_5 LNFFLOW_{i,tv,exo} + \alpha_6 FMS_{i,tv,exo} \\ & + \alpha_7 LNNAV_{i,tv,exo} + \alpha_8 SDEV_{i,tv,exo} + \alpha_9 TNO_{i,ti,exo} + \\ & \alpha_{10} TIME\ Dummy + \varepsilon_{it} \end{aligned} \quad (10)$$

Where *endo* denotes endogenous variable and *exo* denotes exogenous variable.

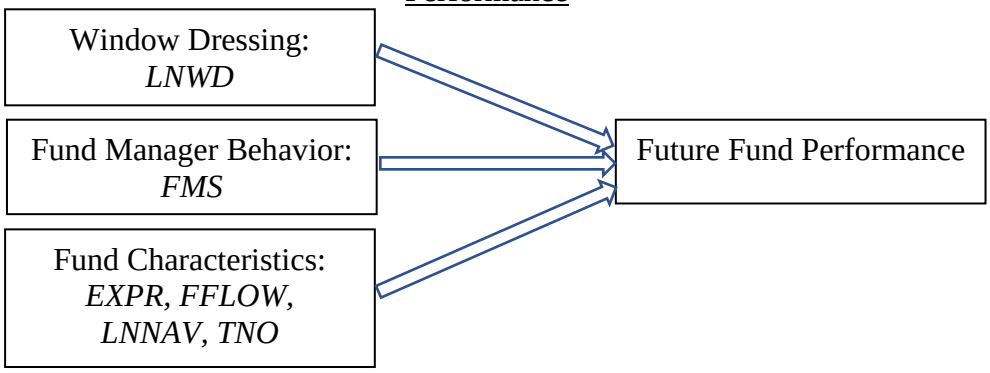
3.3 Effect of Window Dressing on Future Fund Performance

Based on proposed framework in section 2.3, future fund performance would be affected by fund manager behaviour, fund characteristics, and window dressing. Fund manager behaviour is using variable *FMS*, fund characteristics is using variables *EXPR*, *FFLOW*, *NAV* and *TNO*, and window dressing is using variable *WD*. Window dressing on future fund performance could be expressed as:

$$ALPHA_F = f\,(EXPR, FFLOW, FMS, LNNAV, TNO, LNWD) \quad (11)$$

Where *LN* denotes natural logarithms. In this model, $ALPHA_F$ has become an indication of future fund performance to measure the effect of window dressing on future fund performance.

Figure 3.2: Framework of Effect of Window Dressing on Future Fund Performance



Source: Developed for the study.

Figure 3.2 shows the framework for effect of window dressing on future fund performance in our study. To estimate the effect of window dressing on future fund performance as in equation (11), our study uses unbalanced panel data of i = 22 funds from Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia with t = quarter data from year 2015 to 2017. According to (Hauser, n.d.), when the data set compromises of cross section and time series, the data must pool together to run a Poolability Ordinary Least Squares (POLS) regression model test. Hence, by using POLS, our study estimate equation (11) as:

$$ALPHA_{i,tv+1} = \beta_0 + \beta_1 EXPR_{i,ti} + \beta_2 FFLOW_{i,tv} + \beta_3 FMS_{i,tv} + \beta_4 LNNAV_{i,tv} + \beta_5 TNO_{i,ti} + \beta_6 LNWD_{i,tv} + \beta_7 TIME\ Dummy + \varepsilon_{it} \quad (12)$$

From the past study of Agarwal et al. (2011) and Kacperczyk et al. (2008), *EXPR*, *FFLOW* and *WD* share negative relationship with *ALPHA*, where our study expects: $\beta\ EXPR < 0$, $\beta\ FFLOW < 0$ and $\beta\ WD < 0$. This is because higher expense ratio is suspected to be associated with window dressing, thus such transaction cost is inevitable yet does not make any improvement towards future fund performance. According to Berk and Green (2004), high trading inflow by past satisfactory performance equity or past deficient performance equity would lead to dis-economies of scale and lower future fund performance. Fund manager who involve in window dressing is suspected to lower the future fund performance.

However, *FMS*, *NAV* and *TNO* share positive relationship with *ALPHA*, where our study expects: $\beta\ FMS > 0$, $\beta\ NAV > 0$ and $\beta\ TNO > 0$. This is because fund manager who possess good skill in investment strategy would improve the future fund performance. Increase in total net asset value could be another indication of good manager skill managed fund, thus it would increase the future fund performance. Higher turnover ratio might be associated with higher future fund performance because the increasing probability of trading in satisfactory performance equity would increase future fund performance.

Assume there is no unobserved individual effect (heteroscedasticity) and time effect (pure correlation) in the error term. Given that the diversity of equity unit trust fund, our study might expect that such assumptions would be violated. Therefore, our study relaxes such assumption and introduce the use of Fixed Effect Model (FEM) and Random Effect Model (REM). Hence, by using FEM and REM, our study estimate equation (11) as:

Fixed Effect Model:

$$ALPHA_{i,tv+1} = \beta_{0,i,t} + \beta_1\ EXPR_{i,ti} + \beta_2\ FFLOW_{i,tv} + \beta_3\ FMS_{i,tv} + \beta_4\ LNNAV_{i,tv} + \beta_5\ TNO_{i,ti} + \beta_6\ LNWD_{i,tv} + \beta_7\ TIME\ Dummy + e_{it}\ where\ e_{it} \sim^{iid} N(0,1) \quad (13)$$

Random Effect Model:

$$ALPHA_{i,tv+1} = \beta_{0,t} + \beta_1\ EXPR_{i,ti} + \beta_2\ FFLOW_{i,tv} + \beta_3\ FMS_{i,tv} + \beta_4\ LNNAV_{i,tv} + \beta_5\ TNO_{i,ti} + \beta_6\ LNWD_{i,tv} + \beta_7\ TIME\ Dummy + v_{it}\ where\ v_{it} = e_{it} + u_i \quad (14)$$

The constant in FEM has captured the individual and time effect. Besides that, the constant in REM has captured the time effect. The test is based on null hypothesis of no relationship (H_0: There are no relationship between fund manager skill/ window dressing/ independent variables and future fund performance.) with its opposite alternative hypothesis of relationship (H_A: There are relationship between fund manager skill(positive)/ window dressing(negative)/ independent variable and

future fund performance.). After that, a regression model selecting test that is similar in section 3.2 would be conducted to test which regression model are the best model to describe our results.

Table 3.3: Table of Equation (11) Variable Classification

Variables	Exogenous	Endogenous
Time Variant	*FFLOW*	*ALPHA*
	FMS	*WD*
	NAV	
Time Invariant	*EXPR*	
	TNO	

Source: Developed for the study.

However, there is an issue of endogenous problem between window dressing and alpha return similar as section 3.2. Table 3.3 shows table of equation (11) variable classification. As alpha return is the independent variable in determinants of window dressing model, at the same time it is also a dependent variable in the effect of window dressing on future fund performance model. Besides that, there are a few time invariant variables such as *EXPR* and *TNO*. Hence, a better regression test proposed by Hausman & Taylor (1981) known as Hausman Taylor regression model (HTAYLOR) test would be adopted in our study for a better result. This is because ordinary least squares' coefficient has a drawback, where all the time invariant variables are excluded by ''fixed effects'' estimators or ''within groups'' estimators (Hausman & Taylor, 1981). Hence, by using HTAYLOR, our study estimate equation (11) as:

$$ALPHA_{i,tv+1,endo} = \beta_0 + \beta_1 EXPR_{i,ti,exo} + \beta_2 FFLOW_{i,tv,exo} + \beta_3 FMS_{i,tv,exo} + \beta_4 LNNAV_{i,tv,exo} + \beta_5 TNO_{i,ti,exo} + \beta_6 LNWD_{i,tv,endo} + \beta_7 TIME\ Dummy + \varepsilon_{it} \quad (15)$$

Where *endo* denotes endogenous variable and *exo* denotes exogenous variable.

CHAPTER 4: DATA ANALYSIS

4.0 Descriptive Analysis Results

In our study, variables could be classified into return of the fund, fund manager behaviour, fund characteristics and window dressing. *ALPHA* would be represented as return of the fund, *FMS* would be represented as fund manager behaviour and *WD* would be represented as window dressing practice. Besides that, *AGE*, *CRFRH*, *EXPR*, *FFLOW*, *NAV*, *SDEV* and *TNO* would be represented as fund characteristics. Thus, a table of descriptive statistics results for all the variables in our study are shows as follows:

Table 4.1: Table of Descriptive Statistic Results

Variables	Mean	Standard Deviation	Max	Min
AGE	10.265	5.532	26.583	1.667
ALPHA	0.019	0.140	0.538	-0.389
CRFRH	0.114	0.217	0.509	-0.419
EXPR	1.883	0.715	3.520	0.320
FFLOW	0.009	0.058	0.151	-0.192
FMS	4.992	16.525	53.206	-66.190
NAV	0.858	0.542	3.051	0.214
SDEV	10.786	2.568	18.668	5.591
TNO	1.286	0.714	3.020	0.220
WD	3.109	16.587	50.576	-67.990

Notes: The table reports the mean, standard deviation, maximum value and minimum value of the variables.
Source: Developed for the study.

The average mean of target sample's fund has 10.265 years since their inception date. The *ALPHA* of the fund shows positive signs (average 0.019 percentage point),

indicates the fund is making profit but the return is unsatisfactory. The positive, low mean of *CRFRH* (0.114) indicates the investment strategies used by fund manager are mostly hidden. The *EXPR* and *FFLOW* have a mean of 1.883 and 0.009 percentage point. *FMS* shows a positive mean (4.992 percentage point) indicates most of the fund manager possesses good manager skill. *NAV* and *SDEV* have mean value of MYR 0.858 and 10.786, indicating the target sample's funds are cheap for investor to invest and the risk of the funds are high. *TNO* with mean value of 1.286 percentage point indicates there is frequent trading of equity by fund manager. The window dressing has a positive mean value (3.109 percentage point) indicates most of the fund managers involve in window dressing practice.

4.1 Existence of Window Dressing

From the analysis, window dressing has a mean (standard deviation) of 3.109 (16.587) with maximum value and minimum value of 50.576 and -67.990 (Refer to Table 4.1). According to Agarwal et al. (2011), higher value in window dressing indicates the fund manager has higher probability to involve in window dressing practice. 2.15% of the funds may be involved in window dressing. Besides that, a significant *t*-test has been conducted. The statistic value of *t*-test is 3.022, which is statistically significant at significance level of 1%. This result answers the first hypothesis stated, there are concrete evidence to suggest the fund manager in Asia Pacific (Ex-Japan) Equity Unit Trust Fund are practicing window dressing.

4.2 Determinants of Window Dressing

In this section, four distinct types of regression models based on econometric methodology discussed in chapter 3 have been used to analyse the determinants of window dressing. Return of the fund, fund manager behaviour and several fund characteristics have considered to measure the determinants of window dressing. A table result of determinants of window dressing would be show as follows:

Table 4.2: Table of Determinants of Window Dressing

Dependent Variable: Window Dressing (WD)

	POLS	FEM	REM	HTAYLOR
AGE	0.001	0.050	0.001	-0.034***
	(0.003)	(0.034)	(0.003)	(0.012)
ALPHA	-0.156	-0.394**	-0.156	-0.242**
	(0.106)	(0.162)	(0.106)	(0.103)
CRFRH	-0.040		-0.040	-0.187
	(0.036)		(0.036)	(0.672)
EXPR	-0.025		-0.025	0.084
	(0.015)		(0.015)	(0.213)
LNFFLOW	1.224**	1.067**	1.224***	0.969***
	(0.443)	(0.395)	(0.443)	(0.118)
FMS	0.004	0.003	0.004*	0.001
	(0.002)	(0.002)	(0.002)	(0.001)
LNNAV	0.048	2.192***	0.048	1.563***
	(0.036)	(0.725)	(0.036)	(0.301)
SDEV	0.004	0.027	0.004	0.033***
	(0.007)	(0.019)	(0.007)	(0.006)
TNO	0.014		0.014	0.150
	(0.016)		(0.016)	(0.200)
Constant	2.384***	2.056***	2.384***	2.506***
	(0.441)	(0.198)	(0.441)	(0.673)
Time Dummy	Yes	Yes	Yes	
Observations	260	260	260	260
R^2	0.672	0.083	0.672	
Model Significance Test	3,119.620***	28.280***	63,292.470***	380.370***
Poolability *F*-test		2.180***		
Breusch & Pagan Test	0.000			
Hausman Test			36.390***	

*Notes: The table reports the coefficients and the standard errors (in parenthesis) of the model determinants of window dressing. The significance levels are denoted by *(**) *** and indicates reject null hypothesis at the 10-, (5-), and 1-percent significance levels.*

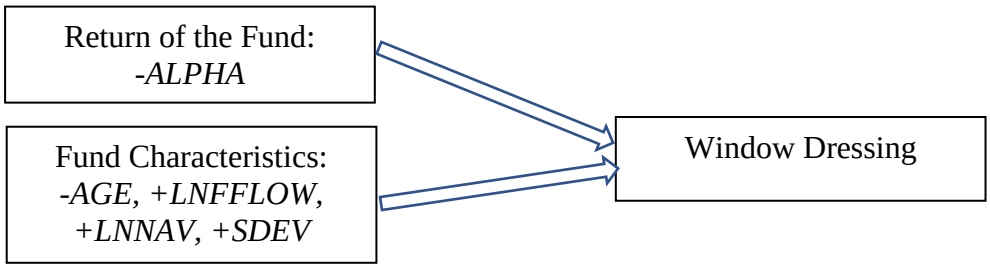
Source: Developed for the study.

Based on the model selecting test, the results show Fixed Effect Model could be best explain the determinants of window dressing. The results show alpha return and window dressing have negative relationship (-0.394) at significance level of 5%.; fund flows have positive relationship (1.067) with window dressing at significance level of 5%.; total net asset value and window dressing have positive

relationship (2.192) at significance level of 1%. The model is significant at significance level of 1%.

However, Hausman Taylor model provides a more reliable result to explain the determinants of window dressing. This is because the Hausman Taylor model inspired by Hausman & Taylor (1981) could capture the endogenous problem between window dressing and alpha return. As alpha return is the independent variable in determinants of window dressing model, at the same time it is also a dependent variable in the effect of window dressing on future fund performance model. Besides that, Hausman Taylor model could also capture the drawback from ordinary least squares model where the time invariant variables (*CRFRH, EXPR* and *TNO*) in the coefficients are excluded by ‘‘fixed effects’’ estimators or ‘‘within groups’’ estimators. Hausman Taylor model has provides a significant improvement on the multivariate regression used by Agarwal et al. (2011) and Kacperczyk et al. (2008). The regression model is significant at significance level of 1%.

Figure 4.1: Result Framework of Determinants of Window Dressing



Source: Developed for the study.

Figure 4.1 shows the result framework of determinants of window dressing in our study. Alpha return and window dressing have a negative relationship (-0.242) at significance level of 5% which align with the research of Kacperczyk et.al. (2008) and Agarwal et.al. (2011). This result is significant to answer the hypothesis which explained fund manager would involve in hidden practice when the current return of the fund is not satisfaction. Fund flows have a positive relationship (0.969) with window dressing at significance level of 1%. This result suggests the hypothesis of Agarwal et al. (2011) that larger fund flows could be the sign of fund manager attempts to beautify the portfolio as fund manager has to disclose their actual

portfolio holdings within delay period according to the requirement of Securities Commission.

Age of the fund has negative relationship (-0.034) with window dressing at significance level of 1%. This result is consistent with the research of Kacperczyk et al. (2008). This result explained newly launched fund would have higher probability that fund manager tend to involve in window dressing and may be due to the fund size is small and the return is not as strong as compared the other fund. Thus, the fund manager would try to window dressing the portfolio to misleading and attract new investors. Total net asset value and window dressing have positive relationship (1.563) at significance level of 1%. This result is contrast with the research of Kacperczyk et al. (2008) but show similar sign with Agarwal et al. (2011). This may indicate investor relies heavily on the balance sheet results when making an investment (Bildersee & Kahn, 1987). Most of the time, total net asset value would rise at the quarter end and this would attract public investor when the fund is window dressed. Standard deviation has positive relationship (0.033) with window dressing at significance level of 1% and show similar sign along with the research of Agarwal et al. (2011). This result explains higher risk of fund has greater volatility of return in equity's holding. This would eventually cause a higher probability to present deficient return, hence stimulate a higher probability of fund manager to involve in window dressing practice.

Although expense ratio and turnover ratio of fund is insignificant in our study, but they show the same sign as the hypothesis of Agarwal et al. (2011). The hypothesis stated that higher fund trading fees and agency fees would increase the chance of fund manager to involve in window dressing. Besides that, higher turnover ratio could explain the unnecessary behaviour of fund manager trading off deficient performance equity and trading in satisfactory performance equity. However, Agarwal et al. (2011) stated there are negative relationship between fund manager skill and window dressing. Our result shows a positive relationship between them, but it is insignificant. Poor fund manager skill is supposed to be the critical determinant to affect the window dressing.

Lastly, window dressing on average would increase by 2.506 percent holding all the other variables are constant at significance level of 1%. This result is aligned with the results of *t*-statistic test on existence of window dressing. This indicates that the window dressing practice is a basic technique used by fund manager in Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia. However, United States study from Agarwal et al. (2011) shows negative window dressing holding all the variables are constant. From this point, fund manager in Malaysia has higher probability to involve in window dressing as compared to United States of America.

4.3 Effect of Window Dressing on Future Fund Performance

In this section, four distinct types of regression models based on econometric methodology discussed in chapter 3 have been used to analyse the effect of window dressing on future fund performance. Fund manager behaviour, window dressing and several fund characteristics have considered to measure the effect of window dressing on future fund performance. A table result of effect of window dressing on future fund performance would be show as follows:

Table 4.3: Table of Effect of Window Dressing on Future Fund Performance

Dependent Variable: Alpha Return (ALPHA)

	POLS	FEM	REM	HTAYLOR
EXPR	-0.019		-0.017	0.001
	(0.021)		(0.022)	(0.060)
FFLOW	0.613*	0.307	0.503*	-0.063
	(0.348)	(0.289)	(0.305)	(0.239)
FMS	0.002	0.002	0.002	0.002**
	(0.002)	(0.001)	(0.001)	(0.001)
LNNAV	0.148*	1.131***	0.221***	0.494***
	(0.072)	(0.385)	(0.085)	(0.116)
TNO	0.070***		0.072***	0.076
	(0.022)		(0.022)	(0.059)
LNWD	-0.037	-0.122***	-0.063***	-0.066**
	(0.022)	(0.039)	(0.023)	(0.032)
Constant	0.124*	0.538***	0.199**	0.360***
	(0.071)	(0.101)	(0.078)	(0.132)
Time Dummy	Yes	Yes	Yes	
Observations	260	260	260	260
R^2	0.309	0.094	0.295	

Model Significance Test	89.590***	23.920***	996.130***	43.920***
Poolability *F*-test		10.370***		
Breusch & Pagan Test	134.270***			
Hausman Test			16.460***	

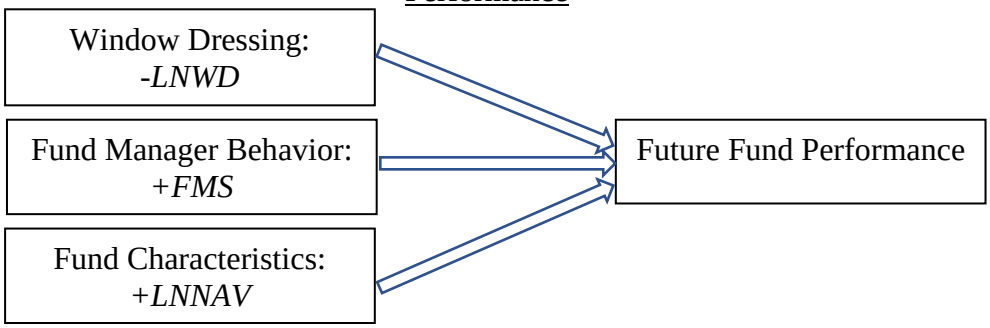
*Notes: The table reports the coefficients and the standard errors (in parenthesis) of the model effect of window dressing on future fund performance. The significance levels are denoted by *(**) *** and indicates reject null hypothesis at the 10-, (5-), and 1-percent significance levels.*

Source: Developed for the study.

Based on the model selecting test, the results show Fixed Effect Model could be best explain the effect of window dressing on future fund performance. The results show total net asset value and future fund performance have positive relationship (1.131) at significance level of 1%.; window dressing has negative relationship (-0.122) with future fund performance at significance level of 1%. The model is significant at significance level of 1%.

However, Hausman Taylor model provides a more reliable result to explain the effect of window dressing on future fund performance. This is because the Hausman Taylor model inspired by Hausman & Taylor (1981) could capture the endogenous problem between window dressing and alpha return. As alpha return is the independent variable in determinants of window dressing model, at the same time it is also a dependent variable in the effect of window dressing on future fund performance model. Besides that, Hausman Taylor model also could capture the drawback from ordinary least squares model where the time invariant variables (*EXPR* and *TNO*) in the coefficients are excluded by ‘‘fixed effects’’ estimators or ‘‘within groups’’ estimators. Hausman Taylor model has provides a significant improvement on the multivariate regression used by Agarwal et al. (2011) and Kacperczyk et al. (2008). The regression model is significant at significance level of 1%.

Figure 4.2: Result Framework of Effect of Window Dressing on Future Fund Performance



Source: Developed for the study.

Figure 4.2 shows the result framework of effect of window dressing on future fund performance. Fund manager skill has positive relationship (0.002) with future fund performance at significance level of 5%. This result is aligned with the research of Agarwal et al. (2011). This result explained fund manager who possess a good skill in investment strategy would increase the future fund performance. Window dressing and future fund performance have negative relationship (0.066) at significance level of 5%. This result shares same sign with research of Kacperczyk et al. (2008) and Agarwal et al. (2011). This indicates when the fund manager performs window dressing, the manager would trade off deficient performance equity and trade in satisfactory performance equity, which would increase the fund flows and turnover ratio of the fund (Agarwal et al., 2011). Hence, it would indirectly increase the unnecessary trading cost of the equity (Agarwal et al., 2011) to maintain the fund performance. Eventually, frequent trading of equity holding would affect the future fund performance. In short, window dressing practice of fund manager would have negative impact on the return of the fund.

Total net asset value has a positive relationship (0.494) with future fund performance at significance level of 1%. The result share same sign with Kacperczyk et al. (2008). According to the result, if holding's equity of fund is performing well, this would increase the total net asset value of portfolio. This also indicates fund manager who possessed good skill in equity selecting would increase the future fund performance. In addition, fund manager skill would affect total net asset value of portfolio and eventually affect the alpha return of the fund.

CHAPTER 5: CONCLUSION

5.0 Summary

Our study aims to study the window dressing practice in unit trust fund by using the data of Asia Pacific (Ex-Japan) Unit Trust Fund Malaysia from year 2015 to 2017. In our study, significance *t*-test is used to detect the existence of window dressing by using return gap method inspired by Kacperczyk et al. (2008), followed by Poolability Ordinary Least Square model, Fixed Effect model, Random Effect model and Hausman Taylor model to study the determinants of window dressing, as well as the effect of window dressing on the future fund performance.

The result from *t*-test confirms the significance of window dressing practice in Asia Pacific (Ex-Japan) Unit Trust Fund Malaysia. The best result from Hausman Taylor model suggests that if a unit trust fund that is young and has an unfavourable current performance would tend to involve in window dressing. In contrary, the increase of fund flows, total net asset value and standard deviation of fund would be the indication of window dressing. There is an interest finding based on the result, that is the fund manager would engage in window dressing even without the influence of other variables.

Also suggested by Hausman Taylor model, window dressing is suggested to cause negative impact on the future performance of fund, hence confirm the validity of endogenous issue among variables. The increase of total net asset value and good fund manager skill would be the indication of satisfactory performance in future of the fund. The existence of window dressing and its effect might explain the lowest persistence of return in Malaysia and inconsistent return among other countries in our study.

5.1 Findings Remark

Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia is a substantial risk of foreign country mutual fund with high foreign trading fee. Our study has suggested some fund manager from target sample involved in window dressing. This result aligned with the study of Agarwal et al. (2011) and Kacperczyk et al. (2008). Even though the reporting requirement on return from fund manager to the public is only 14 business days delay period, the fund manager could still practice window dressing. This indicates the fund manager has superior skill in managing the fund because they could alter the portfolio in such brief period. Based on our study, we suspect the fund manager in Malaysia would like to earn commission from trading of equities holding and the trading might incur higher fee which conflict with the interest of investor based on the existence of window dressing. Thus, our study would like to address the fund manager in Malaysia who practice window dressing might be an ethical issue in investment industry.

Besides that, our study also suggested window dressing would be a value destroying practice towards the future fund performance, which aligned with study of Agarwal et al. (2011). This could have explained why Malaysia has such unsatisfactory return as compared to other country, and investor in Malaysia needs to have high holding power to invest in unit trust fund. Our study would act as a beginning for the investigation of ethical conduct on window dressing issue in Malaysia. Hence, the future researcher and regulatory bodies should aware on this ethical issue to solve the lowest persistence return of Malaysia among other countries, the high entrance fee possesses on investor and the retirement issue in Malaysia.

5.2 Implication of Study

First, our study could be useful towards the general study of relationship in the financial market. It is suggested that multivariate regression is not suitable to apply in studying the time invariant variables and endogenous variables in the context of Malaysia. As shown in our study, Hausman Taylor model is giving a better result

as compared to the other regression model. It may be implied to future researchers that the uses of Hausman Taylor model may give a more comprehensive findings on window dressing study in Malaysia or their desired topic.

Also, our study could be implied to the investors, as they would know that window dressing is a significant factor that would mislead their investment decision. The investor would be able to detect the window practice based on the determinants stated in our study. This is especially crucial to those EPF and PRS holders as they would need to gain consistent return so that they would achieve their long-term investment planning.

Lastly, the findings of our study suggest existence of window dressing in the context of Asia Pacific (Ex-Japan) Equity Unit Trust Fund Malaysia. As compared to negative constant for the regression model of window dressing in the foreign researches of Agarwal et al., (2011); Kacperczyk et al., (2008), the positive constant in our study indicates the fund managers would conduct window dressing even without the influence of other determinants. Our study is an important implication to the policy makers, as Malaysia's fund manager may have conducted window dressing even without knowing. The window dressing issue may need more ethical code and regulation to increase the fund managers' awareness on this misconduct.

Even though The Guidelines on Reporting Requirements for Fund Manager in Malaysia has a shorter delay period of 14 business days (as compared to USA delay period of 60 days), our study suggest that fund manager is still able to conduct window dressing with this brief period. The regulatory bodies may need to constrain the practice of window dressing by developing a stricter requirement on the fund managers' report.

Another thing is that the issue of window dressing needs a clearer definitive by regulatory bodies. There are arguments on this issue, where some are taking window dressing as an unethical act, and some take this issue as a scandal. As window dressing is suggested to harm the investors' benefit, our study suggest that this issue needs a more thorough review on its existence, awareness and potential threat that lies within this issue.

5.3 Limitation of Study

Some data extracted from Bloomberg terminal is not complete in terms of time series and individual availability; this causes our study to have an unbalanced panel data which could not best explain the window dressing issue. Another thing is that the study conducted is based on quarterly data, in specific, the data accumulated or average at March, June, September and December. The information is disclosed at those certain date, but the details of those information are not provided completely. This may cause our study to fail on capturing more hidden window dressing practice within the quarter itself (Kacperczyk et al., 2008).

5.4 Recommendation

Future researchers may continue to study the topic of window dressing in another category of unit trust fund Malaysia such as balanced fund or bond fund as because our study has suggested that the conduct of window dressing is not bound by expense ratio. Thus, future researchers are encouraging to study all the investment vehicle in Malaysia. This would help the study of window dressing practice in Malaysia to be more complete, but not bound by only studying window dressing in the highest expense ratio category of unit trust fund. The future researchers are also encouraged to conduct the study of window dressing on a more specific period basis if a more complete and precise database is available.

5.5 Conclusion

As a conclusion, our study has arisen the problem of lowest persistency in satisfactory return among other countries, higher entrance fee which conflict with the interest of investor and retirement issue in Malaysia. This lead to our intention to study the existence of window dressing based on the problem arises and tend to identify what are the factors that motivate the fund manager to conduct window dressing. Our study suggest younger unit trust fund with poor current performance

would motivate fund manager to window dressing. Besides that, the existence of window dressing is a value destroying effect on future fund performance. Lastly, our study has revealed the effect of window dressing for investor. The investor should be alerted that unit trust fund with high trading fee may give low return if it is window dressed. The policy maker should also be aware of the ethical issue such as benefits earned by the fund manager from harming the interest of investors through window dressing.

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Appendix 1.1

	USD	JPY	AUD	SGD	HKD	THB	PHP	TWD	KRW	IDR	CNY	INR
2014Q4	0.2856	34.4067	0.3515	0.3785	2.2155	9.41	12.8097	9.0349	312.4031	3,556	1.7739	18.0834
2015Q1	0.2691	32.3597	0.353	0.3704	2.0865	8.7542	12.0322	8.4219	299.1927	3,521	1.6687	16.8505
2015Q2	0.2642	32.3141	0.3441	0.3559	2.0478	8.925	11.9192	8.1588	295.5091	3,519	1.6396	16.8515
2015Q3	0.2249	26.9655	0.3208	0.3206	1.7433	8.1813	10.5207	7.3985	267.3489	3,298	1.4297	14.8004
2015Q4	0.233	28.0545	0.3191	0.3294	1.8059	8.3877	10.9296	7.6596	273.8650	3,219	1.5129	15.477
2016Q1	0.255	28.6601	0.3332	0.3446	1.9771	8.9814	11.7325	8.2101	291.8327	3,386	1.6489	16.9072
2016Q2	0.2486	25.5463	0.3345	0.3354	1.9288	8.7508	11.6824	8.0181	286.6003	3,277	1.6517	16.8036
2016Q3	0.2412	24.4615	0.3161	0.3294	1.8707	8.3729	11.697	7.5552	265.8183	3,134	1.609	16.0867
2016Q4	0.2229	26.0132	0.3083	0.3224	1.7288	7.9893	11.0478	7.1865	268.8216	2,996	1.5491	15.1505
2017Q1	0.2259	25.3191	0.2956	0.3158	1.7554	7.7844	11.3464	6.8651	252.9764	3,010	1.5581	14.6425
2017Q2	0.2329	26.0445	0.3024	0.3207	1.8179	7.9146	11.7332	7.0738	266.3018	3,104	1.576	15.0605
2017Q3	0.2365	26.6387	0.3014	0.3213	1.8476	7.8936	12.0169	7.186	271.0099	3,184	1.5795	15.4453
2017Q4	0.2462	27.7622	0.3159	0.3290	1.9247	8.0428	12.3104	7.3087	263.1104	3,337	1.6052	15.7527

Appendix 1.1 demonstrates 12 different countries of denomination of their currency value that common used in Asia Pacific (Ex-Japan) equity unit trust fund Malaysia. The currency rate is based on rate given by Bank Negara Malaysia (BNM). This appendix is adopted from Bank Negara Malaysia.

Appendix 2.0: Computation of Window Dressing

FUND	ID	DATE	RF	RH	EXPR	WD
ABMLCUI	1	3/31/2015	17.22292131	3.236360738	2.28	11.70656057
ABMLCUI	1	6/30/2015	9.958380639	-0.250007261	2.28	7.9283879
ABMLCUI	1	9/30/2015	-5.356679286	1.372904434	2.28	-9.00958372
ABMLCUI	1	12/31/2015	5.93367079	-2.683413537	2.28	6.337084327
ABMLCUI	1	3/31/2016	-21.82474747	2.717450094	2.28	-26.82219757
ABMLCUI	1	6/30/2016	7.929679496	0.229609891	2.28	5.420069605
ABMLCUI	1	9/30/2016	18.51927551	3.732752507	2.28	12.506523
ABMLCUI	1	12/31/2016	-0.670372306	-1.028679197	2.28	-1.921693109
ABMLCUI	1	3/31/2017	14.81899793	4.14475309	2.28	8.394244843
ABMLCUI	1	6/30/2017	9.42125681	4.917836321	2.28	2.223420489
ABMLCUI	1	9/30/2017	18.16937718	0.655449467	2.28	15.23392772
ABMLCUI	1	12/31/2017	14.92805277	1.576426043	2.28	11.07162673
AMAAPJD	2	3/31/2015	17.30797358	1.12	0.32	15.86797358
AMAAPJD	2	6/30/2015	0.143111815	-0.6	0.32	0.423111815
AMAAPJD	2	9/30/2015	-0.089272607	1.26	0.32	-1.669272607
AMAAPJD	2	12/31/2015	6.011902178	-0.07	0.32	5.761902178
AMAAPJD	2	3/31/2016	-7.983581235	2.16	0.32	-10.46358124
AMAAPJD	2	6/30/2016	6.587107355	0.27	0.32	5.997107355
AMAAPJD	2	9/30/2016	25.17047993	0.43	0.32	24.42047993
AMAAPJD	2	12/31/2016	10.59457289	-0.91	0.32	11.18457289
AMAAPJD	2	3/31/2017	23.19641189	2.8	0.32	20.07641189
AMAAPJD	2	6/30/2017	2.496701802	2.31	0.32	-0.133298198
AMAAPJD	2	9/30/2017	6.077894443	-1.3	0.32	7.057894443
AMAAPJD	2	12/31/2017	4.752781476	0	0.32	4.432781476
AMAPEQI	3	3/31/2015	19.40730514	0	0.42	18.98730514
AMAPEQI	3	6/30/2015	17.93079623	0	0.42	17.51079623
AMAPEQI	3	9/30/2015	-15.9099755	0	0.42	-16.3299755
AMAPEQI	3	12/31/2015	9.61045626	0	0.42	9.19045626
AMAPEQI	3	3/31/2016	-4.98986154	0	0.42	-5.40986154
AMAPEQI	3	6/30/2016	16.89101704	0	0.42	16.47101704
AMAPEQI	3	9/30/2016	25.41296292	0	0.42	24.99296292
AMAPEQI	3	12/31/2016	-0.850371768	0	0.42	-1.270371768
AMAPEQI	3	3/31/2017	27.15312681	0	0.42	26.73312681
AMAPEQI	3	6/30/2017	1.298112063	0	0.42	0.878112063
AMAPEQI	3	9/30/2017	11.0913209	-2.78	0.42	13.4513209
AMAPEQI	3	12/31/2017	11.74331727	0	0.42	11.32331727

FUND	ID	DATE	RF	RH	EXPR	WD
AMAPLDV	4	3/31/2015	7.589228583	-2.83595923	1.95	8.475187813
AMAPLDV	4	6/30/2015	-10.28522627	-2.801525787	1.95	-9.433700484
AMAPLDV	4	9/30/2015	-8.670205406	0.757038887	1.95	-11.37724429
AMAPLDV	4	12/31/2015	29.21471365	2.711011542	1.95	24.55370211
AMAPLDV	4	3/31/2016	-19.36090758	2.197637926	1.95	-23.50854551
AMAPLDV	4	6/30/2016	5.102575244	0.965626857	1.95	2.186948387
AMAPLDV	4	9/30/2016	24.85556092	2.900927714	1.95	20.00463321
AMAPLDV	4	12/31/2016	-2.105474848	1.608562385	1.95	-5.664037233
AMAPLDV	4	3/31/2017	19.3788196	1.889728079	1.95	15.53909152
AMAPLDV	4	6/30/2017	10.5975862	3.424702157	1.95	5.22288404
AMAPLDV	4	9/30/2017	6.220632026	1.088287034	1.95	3.182344992
AMAPLDV	4	12/31/2017	19.78276986	0.251309241	1.95	17.58146062
APASXJP	5	3/31/2015	-	-	-	-
APASXJP	5	6/30/2015	-	-	-	-
APASXJP	5	9/30/2015	-	-	-	-
APASXJP	5	12/31/2015	-	-	-	-
APASXJP	5	3/31/2016	-52.83290254	4.82441379	2.63	-60.28731633
APASXJP	5	6/30/2016	9.051549671	1.021799269	2.63	5.399750402
APASXJP	5	9/30/2016	57.42338127	4.21700701	2.63	50.57637426
APASXJP	5	12/31/2016	12.13766737	-1.538862221	2.63	11.0465296
APASXJP	5	3/31/2017	55.29404829	3.861682624	2.63	48.80236567
APASXJP	5	6/30/2017	12.09056231	3.05659514	2.63	6.403967167
APASXJP	5	9/30/2017	22.77642	-2.113225094	2.63	22.25964509
APASXJP	5	12/31/2017	7.268992988	2.695311076	2.63	1.943681912
AVECLAS	6	3/31/2015	17.72130778	0.514225129	2.39	14.81708265
AVECLAS	6	6/30/2015	16.38403825	-6.738839749	2.39	20.732878
AVECLAS	6	9/30/2015	-7.082375594	6.015314597	2.39	-15.48769019
AVECLAS	6	12/31/2015	5.309090909	0.753134785	2.39	2.165956124
AVECLAS	6	3/31/2016	-1.78357169	8.649313721	2.39	-12.82288541
AVECLAS	6	6/30/2016	8.42933606	-0.982339116	2.39	7.021675176
AVECLAS	6	9/30/2016	10.47351236	0.994533658	2.39	7.0889787
AVECLAS	6	12/31/2016	-0.183749296	-4.845144845	2.39	2.271395549
AVECLAS	6	3/31/2017	11.95966939	7.059732895	2.39	2.509936492
AVECLAS	6	6/30/2017	4.334562638	2.256130965	2.39	-0.311568327
AVECLAS	6	9/30/2017	-15.0149088	-0.504205674	2.39	-16.90070312
AVECLAS	6	12/31/2017	-8.452060956	3.242589705	2.39	-14.08465066

FUND	ID	DATE	RF	RH	EXPR	WD
BPTDGFI	7	3/31/2015	17.22292131	3.236360738	2.02	11.96656057
BPTDGFI	7	6/30/2015	9.958380639	-0.250007261	2.02	8.1883879
BPTDGFI	7	9/30/2015	-5.356679286	1.372904434	2.02	-8.74958372
BPTDGFI	7	12/31/2015	5.93367079	-2.683413537	2.02	6.597084327
BPTDGFI	7	3/31/2016	-21.82474747	2.717450094	2.02	-26.56219757
BPTDGFI	7	6/30/2016	7.929679496	0.229609891	2.02	5.680069605
BPTDGFI	7	9/30/2016	18.51927551	3.732752507	2.02	12.766523
BPTDGFI	7	12/31/2016	-0.670372306	-1.028679197	2.02	-1.661693109
BPTDGFI	7	3/31/2017	14.81899793	4.14475309	2.02	8.654244843
BPTDGFI	7	6/30/2017	9.42125681	4.917836321	2.02	2.483420489
BPTDGFI	7	9/30/2017	18.16937718	0.655449467	2.02	15.49392772
BPTDGFI	7	12/31/2017	14.92805277	1.576426043	2.02	11.33162673
CAPSPDI	8	3/31/2015	42.44201015	-1.6861	2.01	42.11811015
CAPSPDI	8	6/30/2015	-9.92317653	-2.368494337	2.01	-9.564682193
CAPSPDI	8	9/30/2015	-2.807084652	-1.952988221	2.01	-2.864096431
CAPSPDI	8	12/31/2015	-5.827993168	0.825553667	2.01	-8.663546835
CAPSPDI	8	3/31/2016	-32.43896516	8.068264758	2.01	-42.51722992
CAPSPDI	8	6/30/2016	23.99388204	2.170843229	2.01	19.81303881
CAPSPDI	8	9/30/2016	45.04361421	2.613616194	2.01	40.41999801
CAPSPDI	8	12/31/2016	-1.084356034	-2.18278284	2.01	-0.911573194
CAPSPDI	8	3/31/2017	38.3975148	2.874570372	2.01	33.51294443
CAPSPDI	8	6/30/2017	23.95957335	2.461252937	2.01	19.48832041
CAPSPDI	8	9/30/2017	5.907838422	-1.600006244	2.01	5.497844666
CAPSPDI	8	12/31/2017	20.74578363	3.01037205	2.01	15.72541158
HLGAPDV	9	3/31/2015	11.01806129	10.7494469	1.77	-1.501385608
HLGAPDV	9	6/30/2015	-12.0761711	-2.418012407	1.77	-11.42815869
HLGAPDV	9	9/30/2015	-2.336004129	1.631423186	1.77	-5.737427315
HLGAPDV	9	12/31/2015	35.11011358	4.789294052	1.77	28.55081953
HLGAPDV	9	3/31/2016	-13.90353072	0.320219049	1.77	-15.99374977
HLGAPDV	9	6/30/2016	-1.608683838	-0.11045501	1.77	-3.268228828
HLGAPDV	9	9/30/2016	29.07362392	-0.43581923	1.77	27.73944315
HLGAPDV	9	12/31/2016	-4.894062731	3.26344178	1.77	-9.927504511
HLGAPDV	9	3/31/2017	37.18757939	4.560615258	1.77	30.85696413
HLGAPDV	9	6/30/2017	13.45980537	-0.893091113	1.77	12.58289648
HLGAPDV	9	9/30/2017	10.46105574	-0.798900327	1.77	9.489956067
HLGAPDV	9	12/31/2017	0.054675003	4.226113731	1.77	-5.941438728

FUND	ID	DATE	RF	RH	EXPR	WD
HWAGLOP	10	3/31/2015	25.17517278	0	1.79	23.38517278
HWAGLOP	10	6/30/2015	8.464155252	-2.450516597	1.79	9.124671849
HWAGLOP	10	9/30/2015	-4.060072793	0.080657265	1.79	-5.930730058
HWAGLOP	10	12/31/2015	1.052702728	1.420655106	1.79	-2.157952378
HWAGLOP	10	3/31/2016	-10.30625045	0.30642233	1.79	-12.40267278
HWAGLOP	10	6/30/2016	10.84379069	-0.012943346	1.79	9.066734034
HWAGLOP	10	9/30/2016	24.2370125	3.107324501	1.79	19.33968799
HWAGLOP	10	12/31/2016	-0.686664095	-0.743751629	1.79	-1.732912466
HWAGLOP	10	3/31/2017	28.54622362	2.148739132	1.79	24.60748449
HWAGLOP	10	6/30/2017	7.658222086	0.162388561	1.79	5.705833525
HWAGLOP	10	9/30/2017	12.2570199	-3.895157218	1.79	14.36217711
HWASCAP	10	12/31/2017	11.14790566	1.336066261	1.79	8.021839395
HWASCAP	11	3/31/2015	12.77788586	0.922172093	1.8	10.05571377
HWASCAP	11	6/30/2015	7.440497215	-2.073059719	1.8	7.713556934
HWASCAP	11	9/30/2015	2.69902126	1.440805628	1.8	-0.541784368
HWASCAP	11	12/31/2015	1.834557704	-2.113980952	1.8	2.148538656
HWASCAP	11	3/31/2016	-1.653135102	3.700762996	1.8	-7.153898098
HWASCAP	11	6/30/2016	15.54288101	1.806988709	1.8	11.9358923
HWASCAP	11	9/30/2016	20.60624565	0.578869743	1.8	18.22737591
HWASCAP	11	12/31/2016	-4.229878207	0.942071759	1.8	-6.971949966
HWASCAP	11	3/31/2017	33.8327965	7.816007765	1.8	24.21678874
HWASCAP	11	6/30/2017	5.57364751	-0.25119011	1.8	4.02483762
HWASCAP	11	9/30/2017	-5.237360938	0.901745202	1.8	-7.93910614
HWASCAP	11	12/31/2017	-6.004749147	1.15153729	1.8	-8.956286437
KAPTRFD	12	3/31/2015	20.30987925	4.0005598	1.98	14.32931945
KAPTRFD	12	6/30/2015	7.744599208	1.059584456	1.98	4.705014753
KAPTRFD	12	9/30/2015	-1.913758275	4.796042009	1.98	-8.689800284
KAPTRFD	12	12/31/2015	-2.487301111	0.128387583	1.98	-4.595688694
KAPTRFD	12	3/31/2016	-14.68049312	3.706201628	1.98	-20.36669475
KAPTRFD	12	6/30/2016	6.158327159	0.898736904	1.98	3.279590256
KAPTRFD	12	9/30/2016	14.7184681	3.236882277	1.98	9.501585826
KAPTRFD	12	12/31/2016	0.522629938	-1.041513646	1.98	-0.415856416
KAPTRFD	12	3/31/2017	12.58842974	2.327408312	1.98	8.281021432
KAPTRFD	12	6/30/2017	1.816945183	0.079104745	1.98	-0.242159562
KAPTRFD	12	9/30/2017	3.07110903	-1.036965543	1.98	2.128074573
KAPTRFD	12	12/31/2017	1.679888626	2.108854219	1.98	-2.408965593

FUND	ID	DATE	RF	RH	EXPR	WD
OSKASGO	13	3/31/2015	22.11624099	2.6	0.77	18.74624099
OSKASGO	13	6/30/2015	8.368932709	-1.99	0.77	9.588932709
OSKASGO	13	9/30/2015	-5.280341653	4.83	0.77	-10.88034165
OSKASGO	13	12/31/2015	4.09166988	0.25	0.77	3.07166988
OSKASGO	13	3/31/2016	-22.75684472	0.53	0.77	-24.05684472
OSKASGO	13	6/30/2016	10.83100351	-2.06	0.77	12.12100351
OSKASGO	13	9/30/2016	31.46112433	3.55	0.77	27.14112433
OSKASGO	13	12/31/2016	-1.214284595	-2.04	0.77	0.055715405
OSKASGO	13	3/31/2017	19.41411852	0.96	0.77	17.68411852
OSKASGO	13	6/30/2017	3.485436048	2.71	0.77	0.005436048
OSKASGO	13	9/30/2017	3.976552666	-1.41	0.77	4.616552666
OSKASGO	13	12/31/2017	1.90341111	1.71	0.77	-0.57658889
OSKUOBE	14	3/31/2015	4.832421099	2.107044518	1.8	0.925376581
OSKUOBE	14	6/30/2015	-15.84802243	-0.243064338	1.8	-17.40495809
OSKUOBE	14	9/30/2015	-24.49760115	5.369692368	1.8	-31.66729352
OSKUOBE	14	12/31/2015	-9.248327202	-14.71726681	1.8	3.668939607
OSKUOBE	14	3/31/2016	-7.69019418	3.262644839	1.8	-12.75283902
OSKUOBE	14	6/30/2016	16.56008922	4.474689662	1.8	10.28539955
OSKUOBE	14	9/30/2016	-38.75800358	4.685840222	1.8	-45.2438438
OSKUOBE	14	12/31/2016	-50.54099074	-0.014786456	1.8	-52.32620428
OSKUOBE	14	3/31/2017	51.98799515	3.656191166	1.8	46.53180399
OSKUOBE	14	6/30/2017	2.026991618	0.399450339	1.8	-0.172458721
OSKUOBE	14	9/30/2017	-10.34134954	2.082054035	1.8	-14.22340357
OSKUOBE	14	12/31/2017	-67.68771192	-1.497451995	1.8	-67.99025993
PACF018	15	3/31/2015	16.98202252	-0.959008328	2.31	15.63103085
PACF018	15	6/30/2015	9.495318331	-1.540763061	2.31	8.726081392
PACF018	15	9/30/2015	-11.07261622	8.379680755	2.31	-21.76229697
PACF018	15	12/31/2015	0.246074982	-2.60711045	2.31	0.543185432
PACF018	15	3/31/2016	-9.66703276	8.980234865	2.31	-20.95726763
PACF018	15	6/30/2016	-11.53169815	-0.555896309	2.31	-13.28580185
PACF018	15	9/30/2016	16.13994993	-1.182677749	2.31	15.01262768
PACF018	15	12/31/2016	-14.45155066	-2.950929079	2.31	-13.81062158
PACF018	15	3/31/2017	38.28818807	5.4310201	2.31	30.54716797
PACF018	15	6/30/2017	-20.62023772	-1.01422686	2.31	-21.91601086
PACF018	15	9/30/2017	-13.80645781	3.415109666	2.31	-19.53156747
PACF018	15	12/31/2017	11.88034188	2.210894506	2.31	7.359447374

FUND	ID	DATE	RF	RH	EXPR	WD
PACGAIR	16	3/31/2015	13.1852579	-2.133747509	3.52	11.79900541
PACGAIR	16	6/30/2015	3.478097276	-3.694457616	3.52	3.652554892
PACGAIR	16	9/30/2015	-26.01813318	2.988473731	3.52	-32.52660691
PACGAIR	16	12/31/2015	6.779164099	0.443627569	3.52	2.81553653
PACGAIR	16	3/31/2016	-6.011581634	4.182122556	3.52	-13.71370419
PACGAIR	16	6/30/2016	14.94984023	0.885729697	3.52	10.54411053
PACGAIR	16	9/30/2016	22.82904163	2.09546066	3.52	17.21358097
PACGAIR	16	12/31/2016	13.8028993	1.354688346	3.52	8.928210951
PACGAIR	16	3/31/2017	20.64304121	3.497914723	3.52	13.62512648
PACGAIR	16	6/30/2017	-14.25015247	1.448634638	3.52	-19.21878711
PACGAIR	16	9/30/2017	2.326208048	-1.401414597	3.52	0.207622645
PACGAIR	16	12/31/2017	-12.13767584	-0.580082863	3.52	-15.07759298
PHASJEP	17	3/31/2015	9.09302002	0.602505148	2.07	6.420514872
PHASJEP	17	6/30/2015	6.82853017	-0.007165269	2.07	4.765695439
PHASJEP	17	9/30/2015	-9.980698255	3.41842441	2.07	-15.46912266
PHASJEP	17	12/31/2015	13.93003613	2.667468541	2.07	9.192567584
PHASJEP	17	3/31/2016	-11.44912376	1.338669694	2.07	-14.85779346
PHASJEP	17	6/30/2016	-4.234817829	-1.498274552	2.07	-4.806543277
PHASJEP	17	9/30/2016	14.25604524	2.642373973	2.07	9.543671268
PHASJEP	17	12/31/2016	1.534703163	1.009790114	2.07	-1.545086951
PHASJEP	17	3/31/2017	18.54147616	6.500627726	2.07	9.970848437
PHASJEP	17	6/30/2017	2.782788792	0.485414968	2.07	0.227373824
PHASJEP	17	9/30/2017	6.113100394	0.54386952	2.07	3.499230874
PHASJEP	17	12/31/2017	7.287323272	1.998949516	2.07	3.218373756
PRUAPEF	18	3/31/2015	20.73164936	-3.737393275	2.29	22.17904263
PRUAPEF	18	6/30/2015	-0.613038981	-11.17657792	2.29	8.273538939
PRUAPEF	18	9/30/2015	-13.66173922	-3.128576773	2.29	-12.82316245
PRUAPEF	18	12/31/2015	-1.971018242	-8.743246385	2.29	4.482228143
PRUAPEF	18	3/31/2016	-20.81022669	4.84481249	2.29	-27.94503918
PRUAPEF	18	6/30/2016	1.034682604	1.895247411	2.29	-3.150564807
PRUAPEF	18	9/30/2016	41.75641102	3.419082771	2.29	36.04732825
PRUAPEF	18	12/31/2016	9.486772487	-2.03337047	2.29	9.230142957
PRUAPEF	18	3/31/2017	34.95797729	-1.914704744	2.29	34.58268203
PRUAPEF	18	6/30/2017	0.063106466	-2.009532783	2.29	-0.217360751
PRUAPEF	18	9/30/2017	7.569570666	-12.46017083	2.29	17.7397415
PRUAPEF	18	12/31/2017	5.82109094	6.21189035	2.29	-2.68079941

FUND	ID	DATE	RF	RH	EXPR	WD
SAFFSAM	19	3/31/2015	9.924694253	1.06	2.1	6.764694253
SAFFSAM	19	6/30/2015	17.58081146	-0.87	2.1	16.35081146
SAFFSAM	19	9/30/2015	-12.02435334	1.45	2.1	-15.57435334
SAFFSAM	19	12/31/2015	6.743725743	2	2.1	2.643725743
SAFFSAM	19	3/31/2016	-17.29322749	0.98	2.1	-20.37322749
SAFFSAM	19	6/30/2016	4.048027808	-1.24	2.1	3.188027808
SAFFSAM	19	9/30/2016	17.77805047	4.38	2.1	11.29805047
SAFFSAM	19	12/31/2016	-1.090557208	-0.17	2.1	-3.020557208
SAFFSAM	19	3/31/2017	8.901839585	2.4	2.1	4.401839585
SAFFSAM	19	6/30/2017	2.221103388	4.39	2.1	-4.268896612
SAFFSAM	19	9/30/2017	7.083074154	0.92	2.1	4.063074154
SAFFSAM	19	12/31/2017	9.202182254	3.16	2.1	3.942182254
SBBAEQF	20	3/31/2015	31.20906376	2.851345236	2.22	26.13771852
SBBAEQF	20	6/30/2015	5.836350456	2.134411047	2.22	1.481939409
SBBAEQF	20	9/30/2015	-6.885054784	1.91536383	2.22	-11.02041861
SBBAEQF	20	12/31/2015	-3.484620802	-3.253692558	2.22	-2.450928244
SBBAEQF	20	3/31/2016	-21.06200283	2.414429095	2.22	-25.69643192
SBBAEQF	20	6/30/2016	11.92442911	-1.31730976	2.22	11.02173887
SBBAEQF	20	9/30/2016	29.69397958	0.519544497	2.22	26.95443508
SBBAEQF	20	12/31/2016	-3.713057851	2.945110786	2.22	-8.878168637
SBBAEQF	20	3/31/2017	20.04628451	4.165413806	2.22	13.6608707
SBBAEQF	20	6/30/2017	17.3294232	2.136988314	2.22	12.97243488
SBBAEQF	20	9/30/2017	16.63931029	-2.257029727	2.22	16.67634001
SBBAEQF	20	12/31/2017	10.42548431	4.070998225	2.22	4.134486086
SBBEQIF	21	3/31/2015	16.17925624	0.249204731	2.32	13.61005151
SBBEQIF	21	6/30/2015	-2.233556932	-0.507206732	2.32	-4.0463502
SBBEQIF	21	9/30/2015	-12.33547611	2.0061771	2.32	-16.66165321
SBBEQIF	21	12/31/2015	1.94277596	1.005646859	2.32	-1.382870899
SBBEQIF	21	3/31/2016	-8.040307961	4.20724481	2.32	-14.56755277
SBBEQIF	21	6/30/2016	2.827897344	0.786610981	2.32	-0.278713637
SBBEQIF	21	9/30/2016	-0.992073618	0.466389864	2.32	-3.778463482
SBBEQIF	21	12/31/2016	-3.969550866	0.308294167	2.32	-6.597845033
SBBEQIF	21	3/31/2017	17.55131473	1.205266755	2.32	14.02604797
SBBEQIF	21	6/30/2017	11.26155599	0.615517078	2.32	8.326038915
SBBEQIF	21	9/30/2017	-2.487272727	3.850493302	2.32	-8.657766029
SBBEQIF	21	12/31/2017	8.374023744	0.632590713	2.32	5.421433031

FUND	ID	DATE	RF	RH	EXPR	WD
TAABNUT	22	3/31/2015	31.21175123	0.98	0.92	29.31175123
TAABNUT	22	6/30/2015	9.436013046	-0.87	0.92	9.386013046
TAABNUT	22	9/30/2015	-10.61970675	1.45	0.92	-12.98970675
TAABNUT	22	12/31/2015	10.62669547	1.06	0.92	8.646695469
TAABNUT	22	3/31/2016	-29.88995322	0.98	0.92	-31.78995322
TAABNUT	22	6/30/2016	16.81707954	-1.24	0.92	17.13707954
TAABNUT	22	9/30/2016	32.48746066	4.38	0.92	27.18746066
TAABNUT	22	12/31/2016	7.421931087	-0.17	0.92	6.671931087
TAABNUT	22	3/31/2017	33.14384501	2.4	0.92	29.82384501
TAABNUT	22	6/30/2017	9.006411531	4.39	0.92	3.696411531
TAABNUT	22	9/30/2017	5.104386415	0.92	0.92	3.264386415
TAABNUT	22	12/31/2017	4.607433825	3.16	0.92	0.527433825

Appendix 2.1: Data of AGE

FUND	ID	DATE	AGE	FUND	ID	DATE	AGE
ABMLCUI	1	3/31/2015	18.6667	AMAPLDV	4	3/31/2015	2.0833
ABMLCUI	1	6/30/2015	18.9167	AMAPLDV	4	6/30/2015	2.3333
ABMLCUI	1	9/30/2015	19.1667	AMAPLDV	4	9/30/2015	2.5833
ABMLCUI	1	12/31/2015	19.4167	AMAPLDV	4	12/31/2015	2.8333
ABMLCUI	1	3/31/2016	19.6667	AMAPLDV	4	3/31/2016	3.0833
ABMLCUI	1	6/30/2016	19.9167	AMAPLDV	4	6/30/2016	3.3333
ABMLCUI	1	9/30/2016	20.1667	AMAPLDV	4	9/30/2016	3.5833
ABMLCUI	1	12/31/2016	20.4167	AMAPLDV	4	12/31/2016	3.8333
ABMLCUI	1	3/31/2017	20.6667	AMAPLDV	4	3/31/2017	4.0833
ABMLCUI	1	6/30/2017	20.9167	AMAPLDV	4	6/30/2017	4.3333
ABMLCUI	1	9/30/2017	21.1667	AMAPLDV	4	9/30/2017	4.5833
ABMLCUI	1	12/31/2017	21.4167	AMAPLDV	4	12/31/2017	4.8333
AMMAPJD	2	3/31/2015	2.6667	APASXJP	5	3/31/2015	-
AMMAPJD	2	6/30/2015	2.9167	APASXJP	5	6/30/2015	-
AMMAPJD	2	9/30/2015	3.1667	APASXJP	5	9/30/2015	-
AMMAPJD	2	12/31/2015	3.4167	APASXJP	5	12/31/2015	-
AMMAPJD	2	3/31/2016	3.6667	APASXJP	5	3/31/2016	8.3333
AMMAPJD	2	6/30/2016	3.9167	APASXJP	5	6/30/2016	8.5833
AMMAPJD	2	9/30/2016	4.1667	APASXJP	5	9/30/2016	8.8333
AMMAPJD	2	12/31/2016	4.4167	APASXJP	5	12/31/2016	9.0833
AMMAPJD	2	3/31/2017	4.6667	APASXJP	5	3/31/2017	9.3333
AMMAPJD	2	6/30/2017	4.9167	APASXJP	5	6/30/2017	9.5833
AMMAPJD	2	9/30/2017	5.1667	APASXJP	5	9/30/2017	9.8333
AMMAPJD	2	12/31/2017	5.4167	APASXJP	5	12/31/2017	10.0833
AMAPEQI	3	3/31/2015	2.9167	AVECLAS	6	3/31/2015	7.6667
AMAPEQI	3	6/30/2015	3.1667	AVECLAS	6	6/30/2015	7.9167
AMAPEQI	3	9/30/2015	3.4167	AVECLAS	6	9/30/2015	8.1667
AMAPEQI	3	12/31/2015	3.6667	AVECLAS	6	12/31/2015	8.4167
AMAPEQI	3	3/31/2016	3.9167	AVECLAS	6	3/31/2016	8.6667
AMAPEQI	3	6/30/2016	4.1667	AVECLAS	6	6/30/2016	8.9167
AMAPEQI	3	9/30/2016	4.4167	AVECLAS	6	9/30/2016	9.1667
AMAPEQI	3	12/31/2016	4.6667	AVECLAS	6	12/31/2016	9.4167
AMAPEQI	3	3/31/2017	4.9167	AVECLAS	6	3/31/2017	9.6667
AMAPEQI	3	6/30/2017	5.1667	AVECLAS	6	6/30/2017	9.9167
AMAPEQI	3	9/30/2017	5.4167	AVECLAS	6	9/30/2017	10.1667
AMAPEQI	3	12/31/2017	5.6667	AVECLAS	6	12/31/2017	10.4167

FUND	ID	DATE	AGE	FUND	ID	DATE	AGE
BPTDGFI	7	3/31/2015	23.8333	HWAGLOP	10	3/31/2015	8.6667
BPTDGFI	7	6/30/2015	24.0833	HWAGLOP	10	6/30/2015	8.9167
BPTDGFI	7	9/30/2015	24.3333	HWAGLOP	10	9/30/2015	9.1667
BPTDGFI	7	12/31/2015	24.5833	HWAGLOP	10	12/31/2015	9.4167
BPTDGFI	7	3/31/2016	24.8333	HWAGLOP	10	3/31/2016	9.6667
BPTDGFI	7	6/30/2016	25.0833	HWAGLOP	10	6/30/2016	9.9167
BPTDGFI	7	9/30/2016	25.3333	HWAGLOP	10	9/30/2016	10.1667
BPTDGFI	7	12/31/2016	25.5833	HWAGLOP	10	12/31/2016	10.4167
BPTDGFI	7	3/31/2017	25.8333	HWAGLOP	10	3/31/2017	10.6667
BPTDGFI	7	6/30/2017	26.0833	HWAGLOP	10	6/30/2017	10.9167
BPTDGFI	7	9/30/2017	26.3333	HWAGLOP	10	9/30/2017	11.1667
BPTDGFI	7	12/31/2017	26.5833	HWAGLOP	10	12/31/2017	11.4167
CPASPDI	8	3/31/2015	3.91667	HWASCAP	11	3/31/2015	10.9167
CPASPDI	8	6/30/2015	4.16667	HWASCAP	11	6/30/2015	11.1667
CPASPDI	8	9/30/2015	4.41667	HWASCAP	11	9/30/2015	11.4167
CPASPDI	8	12/31/2015	4.66667	HWASCAP	11	12/31/2015	11.6667
CPASPDI	8	3/31/2016	4.91667	HWASCAP	11	3/31/2016	11.9167
CPASPDI	8	6/30/2016	5.16667	HWASCAP	11	6/30/2016	12.1667
CPASPDI	8	9/30/2016	5.41667	HWASCAP	11	9/30/2016	12.4167
CPASPDI	8	12/31/2016	5.66667	HWASCAP	11	12/31/2016	12.6667
CPASPDI	8	3/31/2017	5.91667	HWASCAP	11	3/31/2017	12.9167
CPASPDI	8	6/30/2017	6.16667	HWASCAP	11	6/30/2017	13.1667
CPASPDI	8	9/30/2017	6.41667	HWASCAP	11	9/30/2017	13.4167
CPASPDI	8	12/31/2017	6.66667	HWASCAP	11	12/31/2017	13.6667
HLGAPDV	9	3/31/2015	9.0833	KAPTRFD	12	3/31/2015	1.6667
HLGAPDV	9	6/30/2015	9.3333	KAPTRFD	12	6/30/2015	1.9167
HLGAPDV	9	9/30/2015	9.5833	KAPTRFD	12	9/30/2015	2.1667
HLGAPDV	9	12/31/2015	9.8333	KAPTRFD	12	12/31/2015	2.4167
HLGAPDV	9	3/31/2016	10.0833	KAPTRFD	12	3/31/2016	2.6667
HLGAPDV	9	6/30/2016	10.3333	KAPTRFD	12	6/30/2016	2.9167
HLGAPDV	9	9/30/2016	10.5833	KAPTRFD	12	9/30/2016	3.1667
HLGAPDV	9	12/31/2016	10.8333	KAPTRFD	12	12/31/2016	3.4167
HLGAPDV	9	3/31/2017	11.0833	KAPTRFD	12	3/31/2017	3.6667
HLGAPDV	9	6/30/2017	11.3333	KAPTRFD	12	6/30/2017	3.9167
HLGAPDV	9	9/30/2017	11.5833	KAPTRFD	12	9/30/2017	4.1667
HLGAPDV	9	12/31/2017	11.8333	KAPTRFD	12	12/31/2017	4.4167

FUND	ID	DATE	AGE	FUND	ID	DATE	AGE
OSKASGO	13	3/31/2015	7.1667	PACGAIR	16	3/31/2015	4.9167
OSKASGO	13	6/30/2015	7.4167	PACGAIR	16	6/30/2015	5.1667
OSKASGO	13	9/30/2015	7.6667	PACGAIR	16	9/30/2015	5.4167
OSKASGO	13	12/31/2015	7.9167	PACGAIR	16	12/31/2015	5.6667
OSKASGO	13	3/31/2016	8.1667	PACGAIR	16	3/31/2016	5.9167
OSKASGO	13	6/30/2016	8.4167	PACGAIR	16	6/30/2016	6.1667
OSKASGO	13	9/30/2016	8.6667	PACGAIR	16	9/30/2016	6.4167
OSKASGO	13	12/31/2016	8.9167	PACGAIR	16	12/31/2016	6.6667
OSKASGO	13	3/31/2017	9.1667	PACGAIR	16	3/31/2017	6.9167
OSKASGO	13	6/30/2017	9.4167	PACGAIR	16	6/30/2017	7.1667
OSKASGO	13	9/30/2017	9.6667	PACGAIR	16	9/30/2017	7.4167
OSKASGO	13	12/31/2017	9.9167	PACGAIR	16	12/31/2017	7.6667
OSKUOBE	14	3/31/2015	18.5	PHASJEP	17	3/31/2015	8.75
OSKUOBE	14	6/30/2015	18.75	PHASJEP	17	6/30/2015	9
OSKUOBE	14	9/30/2015	19	PHASJEP	17	9/30/2015	9.25
OSKUOBE	14	12/31/2015	19.25	PHASJEP	17	12/31/2015	9.5
OSKUOBE	14	3/31/2016	19.5	PHASJEP	17	3/31/2016	9.75
OSKUOBE	14	6/30/2016	19.75	PHASJEP	17	6/30/2016	10
OSKUOBE	14	9/30/2016	20	PHASJEP	17	9/30/2016	10.25
OSKUOBE	14	12/31/2016	20.25	PHASJEP	17	12/31/2016	10.5
OSKUOBE	14	3/31/2017	20.5	PHASJEP	17	3/31/2017	10.75
OSKUOBE	14	6/30/2017	20.75	PHASJEP	17	6/30/2017	11
OSKUOBE	14	9/30/2017	21	PHASJEP	17	9/30/2017	11.25
OSKUOBE	14	12/31/2017	21.25	PHASJEP	17	12/31/2017	11.5
PACF018	15	3/31/2015	9.75	PRUAPEF	18	3/31/2015	9.6667
PACF018	15	6/30/2015	10	PRUAPEF	18	6/30/2015	9.9167
PACF018	15	9/30/2015	10.25	PRUAPEF	18	9/30/2015	10.1667
PACF018	15	12/31/2015	10.5	PRUAPEF	18	12/31/2015	10.4167
PACF018	15	3/31/2016	10.75	PRUAPEF	18	3/31/2016	10.6667
PACF018	15	6/30/2016	11	PRUAPEF	18	6/30/2016	10.9167
PACF018	15	9/30/2016	11.25	PRUAPEF	18	9/30/2016	11.1667
PACF018	15	12/31/2016	11.5	PRUAPEF	18	12/31/2016	11.4167
PACF018	15	3/31/2017	11.75	PRUAPEF	18	3/31/2017	11.6667
PACF018	15	6/30/2017	12	PRUAPEF	18	6/30/2017	11.9167
PACF018	15	9/30/2017	12.25	PRUAPEF	18	9/30/2017	12.1667
PACF018	15	12/31/2017	12.5	PRUAPEF	18	12/31/2017	12.4167

FUND	ID	DATE	AGE	FUND	ID	DATE	AGE
SAFFSAM	19	3/31/2015	8.25	TAABNUT	22	3/31/2015	7.5
SAFFSAM	19	6/30/2015	8.5	TAABNUT	22	6/30/2015	7.75
SAFFSAM	19	9/30/2015	8.75	TAABNUT	22	9/30/2015	8
SAFFSAM	19	12/31/2015	9	TAABNUT	22	12/31/2015	8.25
SAFFSAM	19	3/31/2016	9.25	TAABNUT	22	3/31/2016	8.5
SAFFSAM	19	6/30/2016	9.5	TAABNUT	22	6/30/2016	8.75
SAFFSAM	19	9/30/2016	9.75	TAABNUT	22	9/30/2016	9
SAFFSAM	19	12/31/2016	10	TAABNUT	22	12/31/2016	9.25
SAFFSAM	19	3/31/2017	10.25	TAABNUT	22	3/31/2017	9.5
SAFFSAM	19	6/30/2017	10.5	TAABNUT	22	6/30/2017	9.75
SAFFSAM	19	9/30/2017	10.75	TAABNUT	22	9/30/2017	10
SAFFSAM	19	12/31/2017	11	TAABNUT	22	12/31/2017	10.25
SBBAEQF	20	3/31/2015	11.8333				
SBBAEQF	20	6/30/2015	9.3333				
SBBAEQF	20	9/30/2015	9.5833				
SBBAEQF	20	12/31/2015	9.8333				
SBBAEQF	20	3/31/2016	10.0833				
SBBAEQF	20	6/30/2016	10.3333				
SBBAEQF	20	9/30/2016	10.5833				
SBBAEQF	20	12/31/2016	10.8333				
SBBAEQF	20	3/31/2017	11.0833				
SBBAEQF	20	6/30/2017	11.3333				
SBBAEQF	20	9/30/2017	11.5833				
SBBAEQF	20	12/31/2017	11.8333				
SBBEQIF	21	3/31/2015	11.5				
SBBEQIF	21	6/30/2015	11.75				
SBBEQIF	21	9/30/2015	12				
SBBEQIF	21	12/31/2015	12.25				
SBBEQIF	21	3/31/2016	12.5				
SBBEQIF	21	6/30/2016	12.75				
SBBEQIF	21	9/30/2016	13				
SBBEQIF	21	12/31/2016	13.25				
SBBEQIF	21	3/31/2017	13.5				
SBBEQIF	21	6/30/2017	13.75				
SBBEQIF	21	9/30/2017	14				
SBBEQIF	21	12/31/2017	14.25				

Appendix 2.2: Data of ALPHA

FUND	ID	DATE	ALPHA	FUND	ID	DATE	ALPHA
ABMLCUI	1	3/31/2015	0.237868	AMAPLDV	4	3/31/2015	-0.149752
ABMLCUI	1	6/30/2015	0.354483	AMAPLDV	4	6/30/2015	-0.159283
ABMLCUI	1	9/30/2015	0.30903	AMAPLDV	4	9/30/2015	-0.076187
ABMLCUI	1	12/31/2015	0.295915	AMAPLDV	4	12/31/2015	0.086186
ABMLCUI	1	3/31/2016	0.000799	AMAPLDV	4	3/31/2016	-0.021558
ABMLCUI	1	6/30/2016	-0.069081	AMAPLDV	4	6/30/2016	0.037797
ABMLCUI	1	9/30/2016	-0.034998	AMAPLDV	4	9/30/2016	0.112481
ABMLCUI	1	12/31/2016	-0.057351	AMAPLDV	4	12/31/2016	-0.017399
ABMLCUI	1	3/31/2017	0.235046	AMAPLDV	4	3/31/2017	0.228809
ABMLCUI	1	6/30/2017	0.236912	AMAPLDV	4	6/30/2017	0.243345
ABMLCUI	1	9/30/2017	0.222529	AMAPLDV	4	9/30/2017	0.115727
ABMLCUI	1	12/31/2017	0.342139	AMAPLDV	4	12/31/2017	0.226441
AMMAPJD	2	3/31/2015	-0.019603	APASXJP	5	3/31/2015	-
AMMAPJD	2	6/30/2015	-0.011937	APASXJP	5	6/30/2015	-
AMMAPJD	2	9/30/2015	0.020637	APASXJP	5	9/30/2015	-
AMMAPJD	2	12/31/2015	0.026378	APASXJP	5	12/31/2015	-
AMMAPJD	2	3/31/2016	-0.022287	APASXJP	5	3/31/2016	-0.103697
AMMAPJD	2	6/30/2016	0.028985	APASXJP	5	6/30/2016	-0.186084
AMMAPJD	2	9/30/2016	0.053408	APASXJP	5	9/30/2016	-0.2656
AMMAPJD	2	12/31/2016	0.075862	APASXJP	5	12/31/2016	-0.250732
AMMAPJD	2	3/31/2017	0.107021	APASXJP	5	3/31/2017	-0.215385
AMMAPJD	2	6/30/2017	0.04021	APASXJP	5	6/30/2017	-0.130178
AMMAPJD	2	9/30/2017	-0.041671	APASXJP	5	9/30/2017	-0.077469
AMMAPJD	2	12/31/2017	-0.051458	APASXJP	5	12/31/2017	-0.034514
AMAPEQI	3	3/31/2015	-0.069701	AVECLAS	6	3/31/2015	0.25475
AMAPEQI	3	6/30/2015	0.008114	AVECLAS	6	6/30/2015	0.293772
AMAPEQI	3	9/30/2015	-0.129358	AVECLAS	6	9/30/2015	0.089149
AMAPEQI	3	12/31/2015	-0.080706	AVECLAS	6	12/31/2015	0.135548
AMAPEQI	3	3/31/2016	-0.065437	AVECLAS	6	3/31/2016	0.177658
AMAPEQI	3	6/30/2016	-0.058645	AVECLAS	6	6/30/2016	0.109916
AMAPEQI	3	9/30/2016	0.120867	AVECLAS	6	9/30/2016	0.177422
AMAPEQI	3	12/31/2016	-0.004922	AVECLAS	6	12/31/2016	0.112072
AMAPEQI	3	3/31/2017	0.004725	AVECLAS	6	3/31/2017	0.098948
AMAPEQI	3	6/30/2017	-0.090945	AVECLAS	6	6/30/2017	0.128778
AMAPEQI	3	9/30/2017	-0.136507	AVECLAS	6	9/30/2017	-0.085995
AMAPEQI	3	12/31/2017	-0.02416	AVECLAS	6	12/31/2017	-0.193397

FUND	ID	DATE	ALPHA	FUND	ID	DATE	ALPHA
BPTDGFI	7	3/31/2015	0.135797	HWAGLOP	10	3/31/2015	0.088606
BPTDGFI	7	6/30/2015	0.15326	HWAGLOP	10	6/30/2015	0.104973
BPTDGFI	7	9/30/2015	0.140287	HWAGLOP	10	9/30/2015	0.153552
BPTDGFI	7	12/31/2015	0.112464	HWAGLOP	10	12/31/2015	0.206213
BPTDGFI	7	3/31/2016	-0.026812	HWAGLOP	10	3/31/2016	0.077808
BPTDGFI	7	6/30/2016	-0.056471	HWAGLOP	10	6/30/2016	-0.003549
BPTDGFI	7	9/30/2016	0.023909	HWAGLOP	10	9/30/2016	0.096387
BPTDGFI	7	12/31/2016	-0.000679	HWAGLOP	10	12/31/2016	0.102974
BPTDGFI	7	3/31/2017	0.139696	HWAGLOP	10	3/31/2017	0.335173
BPTDGFI	7	6/30/2017	0.137525	HWAGLOP	10	6/30/2017	0.300822
BPTDGFI	7	9/30/2017	0.115441	HWAGLOP	10	9/30/2017	0.218991
BPTDGFI	7	12/31/2017	0.23826	HWAGLOP	10	12/31/2017	0.281638
CPASPDI	8	3/31/2015	0.205794	HWASCAP	11	3/31/2015	0.115408
CPASPDI	8	6/30/2015	0.151283	HWASCAP	11	6/30/2015	0.08003
CPASPDI	8	9/30/2015	0.146501	HWASCAP	11	9/30/2015	0.080347
CPASPDI	8	12/31/2015	0.016735	HWASCAP	11	12/31/2015	0.200557
CPASPDI	8	3/31/2016	-0.046653	HWASCAP	11	3/31/2016	0.089217
CPASPDI	8	6/30/2016	-0.009879	HWASCAP	11	6/30/2016	0.08767
CPASPDI	8	9/30/2016	0.001024	HWASCAP	11	9/30/2016	0.260862
CPASPDI	8	12/31/2016	-0.002023	HWASCAP	11	12/31/2016	0.180661
CPASPDI	8	3/31/2017	0.079938	HWASCAP	11	3/31/2017	0.537801
CPASPDI	8	6/30/2017	0.085269	HWASCAP	11	6/30/2017	0.454074
CPASPDI	8	9/30/2017	-0.018754	HWASCAP	11	9/30/2017	0.181881
CPASPDI	8	12/31/2017	0.078031	HWASCAP	11	12/31/2017	0.172973
HLGAPDV	9	3/31/2015	-0.22888	KAPTRFD	12	3/31/2015	0.003436
HLGAPDV	9	6/30/2015	-0.202011	KAPTRFD	12	6/30/2015	0.097223
HLGAPDV	9	9/30/2015	-0.219035	KAPTRFD	12	9/30/2015	-0.000428
HLGAPDV	9	12/31/2015	0.04663	KAPTRFD	12	12/31/2015	0.05328
HLGAPDV	9	3/31/2016	0.038182	KAPTRFD	12	3/31/2016	-0.007021
HLGAPDV	9	6/30/2016	0.059069	KAPTRFD	12	6/30/2016	-0.096863
HLGAPDV	9	9/30/2016	0.157622	KAPTRFD	12	9/30/2016	-0.13364
HLGAPDV	9	12/31/2016	-0.050298	KAPTRFD	12	12/31/2016	-0.080824
HLGAPDV	9	3/31/2017	-0.018306	KAPTRFD	12	3/31/2017	0.014584
HLGAPDV	9	6/30/2017	0.03999	KAPTRFD	12	6/30/2017	-0.0401
HLGAPDV	9	9/30/2017	0.004287	KAPTRFD	12	9/30/2017	-0.069897
HLGAPDV	9	12/31/2017	-0.028631	KAPTRFD	12	12/31/2017	-0.095799

FUND	ID	DATE	ALPHA	FUND	ID	DATE	ALPHA
OSKASGO	13	3/31/2015	-0.123841	PACGAIR	16	3/31/2015	-0.389142
OSKASGO	13	6/30/2015	-0.010681	PACGAIR	16	6/30/2015	-0.288587
OSKASGO	13	9/30/2015	-0.081363	PACGAIR	16	9/30/2015	-0.319199
OSKASGO	13	12/31/2015	-0.058881	PACGAIR	16	12/31/2015	-0.135522
OSKASGO	13	3/31/2016	-0.079454	PACGAIR	16	3/31/2016	-0.053207
OSKASGO	13	6/30/2016	-0.048819	PACGAIR	16	6/30/2016	-0.001687
OSKASGO	13	9/30/2016	0.014128	PACGAIR	16	9/30/2016	0.06737
OSKASGO	13	12/31/2016	0.025551	PACGAIR	16	12/31/2016	0.119612
OSKASGO	13	3/31/2017	0.023283	PACGAIR	16	3/31/2017	0.092589
OSKASGO	13	6/30/2017	0.042736	PACGAIR	16	6/30/2017	-0.032984
OSKASGO	13	9/30/2017	0.015248	PACGAIR	16	9/30/2017	-0.074711
OSKASGO	13	12/31/2017	-0.059943	PACGAIR	16	12/31/2017	-0.220278
OSKUOBE	14	3/31/2015	-0.001413	PHASJEP	17	3/31/2015	-0.180993
OSKUOBE	14	6/30/2015	-0.067479	PHASJEP	17	6/30/2015	-0.119956
OSKUOBE	14	9/30/2015	-0.28112	PHASJEP	17	9/30/2015	-0.222633
OSKUOBE	14	12/31/2015	-0.056646	PHASJEP	17	12/31/2015	0.042951
OSKUOBE	14	3/31/2016	-0.099705	PHASJEP	17	3/31/2016	0.071414
OSKUOBE	14	6/30/2016	0.056941	PHASJEP	17	6/30/2016	-0.046387
OSKUOBE	14	9/30/2016	-0.015959	PHASJEP	17	9/30/2016	-0.020777
OSKUOBE	14	12/31/2016	-0.314784	PHASJEP	17	12/31/2016	-0.14045
OSKUOBE	14	3/31/2017	-0.071475	PHASJEP	17	3/31/2017	-0.076162
OSKUOBE	14	6/30/2017	-0.210839	PHASJEP	17	6/30/2017	0.023209
OSKUOBE	14	9/30/2017	-0.038655	PHASJEP	17	9/30/2017	0.07265
OSKUOBE	14	12/31/2017	-0.087704	PHASJEP	17	12/31/2017	0.084537
PACF018	15	3/31/2015	-0.008304	PRUAPEF	18	3/31/2015	-0.032403
PACF018	15	6/30/2015	0.133963	PRUAPEF	18	6/30/2015	-0.058092
PACF018	15	9/30/2015	0.054653	PRUAPEF	18	9/30/2015	-0.094741
PACF018	15	12/31/2015	0.133584	PRUAPEF	18	12/31/2015	-0.157927
PACF018	15	3/31/2016	-0.031059	PRUAPEF	18	3/31/2016	-0.153482
PACF018	15	6/30/2016	-0.200345	PRUAPEF	18	6/30/2016	-0.162696
PACF018	15	9/30/2016	-0.115308	PRUAPEF	18	9/30/2016	-0.08675
PACF018	15	12/31/2016	-0.114618	PRUAPEF	18	12/31/2016	-0.033765
PACF018	15	3/31/2017	0.062676	PRUAPEF	18	3/31/2017	0.024935
PACF018	15	6/30/2017	-0.088002	PRUAPEF	18	6/30/2017	0.062389
PACF018	15	9/30/2017	-0.246671	PRUAPEF	18	9/30/2017	-0.037149
PACF018	15	12/31/2017	-0.142583	PRUAPEF	18	12/31/2017	-0.067603

FUND	ID	DATE	ALPHA	FUND	ID	DATE	ALPHA
SAFFSAM	19	3/31/2015	-0.139857	TAABNUT	22	3/31/2015	0.023216
SAFFSAM	19	6/30/2015	0.145967	TAABNUT	22	6/30/2015	0.057701
SAFFSAM	19	9/30/2015	0.041169	TAABNUT	22	9/30/2015	0.065816
SAFFSAM	19	12/31/2015	0.100014	TAABNUT	22	12/31/2015	0.047037
SAFFSAM	19	3/31/2016	0.042429	TAABNUT	22	3/31/2016	-0.003302
SAFFSAM	19	6/30/2016	-0.204826	TAABNUT	22	6/30/2016	0.011673
SAFFSAM	19	9/30/2016	-0.039109	TAABNUT	22	9/30/2016	-0.011811
SAFFSAM	19	12/31/2016	-0.145279	TAABNUT	22	12/31/2016	-0.034344
SAFFSAM	19	3/31/2017	-0.04776	TAABNUT	22	3/31/2017	0.086609
SAFFSAM	19	6/30/2017	-0.05449	TAABNUT	22	6/30/2017	0.065243
SAFFSAM	19	9/30/2017	-0.128567	TAABNUT	22	9/30/2017	-0.017852
SAFFSAM	19	12/31/2017	-0.006561	TAABNUT	22	12/31/2017	-0.029373
SBBAEQF	20	3/31/2015	0.201777				
SBBAEQF	20	6/30/2015	0.152425				
SBBAEQF	20	9/30/2015	0.119552				
SBBAEQF	20	12/31/2015	-0.005029				
SBBAEQF	20	3/31/2016	-0.069188				
SBBAEQF	20	6/30/2016	-0.064531				
SBBAEQF	20	9/30/2016	-0.041527				
SBBAEQF	20	12/31/2016	-0.05774				
SBBAEQF	20	3/31/2017	-0.056168				
SBBAEQF	20	6/30/2017	-0.03534				
SBBAEQF	20	9/30/2017	-0.039274				
SBBAEQF	20	12/31/2017	0.057289				
SBBEQIF	21	3/31/2015	0.248756				
SBBEQIF	21	6/30/2015	0.261171				
SBBEQIF	21	9/30/2015	0.220211				
SBBEQIF	21	12/31/2015	0.15027				
SBBEQIF	21	3/31/2016	-0.063058				
SBBEQIF	21	6/30/2016	-0.103215				
SBBEQIF	21	9/30/2016	0.019433				
SBBEQIF	21	12/31/2016	0.016369				
SBBEQIF	21	3/31/2017	0.216241				
SBBEQIF	21	6/30/2017	0.204568				
SBBEQIF	21	9/30/2017	0.16318				
SBBEQIF	21	12/31/2017	0.298022				

Appendix 2.3: Data of CRFRH

FUND	ID	DATE	CRFRH	FUND	ID	DATE	CRFRH
ABMLCUI	1	3/31/2015	0.158942	AMAPLDV	4	3/31/2015	0.337615
ABMLCUI	1	6/30/2015	0.158942	AMAPLDV	4	6/30/2015	0.337615
ABMLCUI	1	9/30/2015	0.158942	AMAPLDV	4	9/30/2015	0.337615
ABMLCUI	1	12/31/2015	0.158942	AMAPLDV	4	12/31/2015	0.337615
ABMLCUI	1	3/31/2016	0.158942	AMAPLDV	4	3/31/2016	0.337615
ABMLCUI	1	6/30/2016	0.158942	AMAPLDV	4	6/30/2016	0.337615
ABMLCUI	1	9/30/2016	0.158942	AMAPLDV	4	9/30/2016	0.337615
ABMLCUI	1	12/31/2016	0.158942	AMAPLDV	4	12/31/2016	0.337615
ABMLCUI	1	3/31/2017	0.158942	AMAPLDV	4	3/31/2017	0.337615
ABMLCUI	1	6/30/2017	0.158942	AMAPLDV	4	6/30/2017	0.337615
ABMLCUI	1	9/30/2017	0.158942	AMAPLDV	4	9/30/2017	0.337615
ABMLCUI	1	12/31/2017	0.158942	AMAPLDV	4	12/31/2017	0.337615
AMMAPJD	2	3/31/2015	0.348137	APASXJP	5	3/31/2015	-
AMMAPJD	2	6/30/2015	0.348137	APASXJP	5	6/30/2015	-
AMMAPJD	2	9/30/2015	0.348137	APASXJP	5	9/30/2015	-
AMMAPJD	2	12/31/2015	0.348137	APASXJP	5	12/31/2015	-
AMMAPJD	2	3/31/2016	0.348137	APASXJP	5	3/31/2016	-0.115067
AMMAPJD	2	6/30/2016	0.348137	APASXJP	5	6/30/2016	-0.115067
AMMAPJD	2	9/30/2016	0.348137	APASXJP	5	9/30/2016	-0.115067
AMMAPJD	2	12/31/2016	0.348137	APASXJP	5	12/31/2016	-0.115067
AMMAPJD	2	3/31/2017	0.348137	APASXJP	5	3/31/2017	-0.115067
AMMAPJD	2	6/30/2017	0.348137	APASXJP	5	6/30/2017	-0.115067
AMMAPJD	2	9/30/2017	0.348137	APASXJP	5	9/30/2017	-0.115067
AMMAPJD	2	12/31/2017	0.348137	APASXJP	5	12/31/2017	-0.115067
AMAPEQI	3	3/31/2015	-0.029155	AVECLAS	6	3/31/2015	-0.26518
AMAPEQI	3	6/30/2015	-0.029155	AVECLAS	6	6/30/2015	-0.26518
AMAPEQI	3	9/30/2015	-0.029155	AVECLAS	6	9/30/2015	-0.26518
AMAPEQI	3	12/31/2015	-0.029155	AVECLAS	6	12/31/2015	-0.26518
AMAPEQI	3	3/31/2016	-0.029155	AVECLAS	6	3/31/2016	-0.26518
AMAPEQI	3	6/30/2016	-0.029155	AVECLAS	6	6/30/2016	-0.26518
AMAPEQI	3	9/30/2016	-0.029155	AVECLAS	6	9/30/2016	-0.26518
AMAPEQI	3	12/31/2016	-0.029155	AVECLAS	6	12/31/2016	-0.26518
AMAPEQI	3	3/31/2017	-0.029155	AVECLAS	6	3/31/2017	-0.26518
AMAPEQI	3	6/30/2017	-0.029155	AVECLAS	6	6/30/2017	-0.26518
AMAPEQI	3	9/30/2017	-0.029155	AVECLAS	6	9/30/2017	-0.26518
AMAPEQI	3	12/31/2017	-0.029155	AVECLAS	6	12/31/2017	-0.26518

FUND	ID	DATE	CRFRH	FUND	ID	DATE	CRFRH
BPTDGFI	7	3/31/2015	0.158942	HWAGLOP	10	3/31/2015	0.273247
BPTDGFI	7	6/30/2015	0.158942	HWAGLOP	10	6/30/2015	0.273247
BPTDGFI	7	9/30/2015	0.158942	HWAGLOP	10	9/30/2015	0.273247
BPTDGFI	7	12/31/2015	0.158942	HWAGLOP	10	12/31/2015	0.273247
BPTDGFI	7	3/31/2016	0.158942	HWAGLOP	10	3/31/2016	0.273247
BPTDGFI	7	6/30/2016	0.158942	HWAGLOP	10	6/30/2016	0.273247
BPTDGFI	7	9/30/2016	0.158942	HWAGLOP	10	9/30/2016	0.273247
BPTDGFI	7	12/31/2016	0.158942	HWAGLOP	10	12/31/2016	0.273247
BPTDGFI	7	3/31/2017	0.158942	HWAGLOP	10	3/31/2017	0.273247
BPTDGFI	7	6/30/2017	0.158942	HWAGLOP	10	6/30/2017	0.273247
BPTDGFI	7	9/30/2017	0.158942	HWAGLOP	10	9/30/2017	0.273247
BPTDGFI	7	12/31/2017	0.158942	HWAGLOP	10	12/31/2017	0.273247
CPASPDI	8	3/31/2015	-0.080085	HWASCAP	11	3/31/2015	0.508856
CPASPDI	8	6/30/2015	-0.080085	HWASCAP	11	6/30/2015	0.508856
CPASPDI	8	9/30/2015	-0.080085	HWASCAP	11	9/30/2015	0.508856
CPASPDI	8	12/31/2015	-0.080085	HWASCAP	11	12/31/2015	0.508856
CPASPDI	8	3/31/2016	-0.080085	HWASCAP	11	3/31/2016	0.508856
CPASPDI	8	6/30/2016	-0.080085	HWASCAP	11	6/30/2016	0.508856
CPASPDI	8	9/30/2016	-0.080085	HWASCAP	11	9/30/2016	0.508856
CPASPDI	8	12/31/2016	-0.080085	HWASCAP	11	12/31/2016	0.508856
CPASPDI	8	3/31/2017	-0.080085	HWASCAP	11	3/31/2017	0.508856
CPASPDI	8	6/30/2017	-0.080085	HWASCAP	11	6/30/2017	0.508856
CPASPDI	8	9/30/2017	-0.080085	HWASCAP	11	9/30/2017	0.508856
CPASPDI	8	12/31/2017	-0.080085	HWASCAP	11	12/31/2017	0.508856
HLGAPDV	9	3/31/2015	0.309553	KAPTRFD	12	3/31/2015	0.122294
HLGAPDV	9	6/30/2015	0.309553	KAPTRFD	12	6/30/2015	0.122294
HLGAPDV	9	9/30/2015	0.309553	KAPTRFD	12	9/30/2015	0.122294
HLGAPDV	9	12/31/2015	0.309553	KAPTRFD	12	12/31/2015	0.122294
HLGAPDV	9	3/31/2016	0.309553	KAPTRFD	12	3/31/2016	0.122294
HLGAPDV	9	6/30/2016	0.309553	KAPTRFD	12	6/30/2016	0.122294
HLGAPDV	9	9/30/2016	0.309553	KAPTRFD	12	9/30/2016	0.122294
HLGAPDV	9	12/31/2016	0.309553	KAPTRFD	12	12/31/2016	0.122294
HLGAPDV	9	3/31/2017	0.309553	KAPTRFD	12	3/31/2017	0.122294
HLGAPDV	9	6/30/2017	0.309553	KAPTRFD	12	6/30/2017	0.122294
HLGAPDV	9	9/30/2017	0.309553	KAPTRFD	12	9/30/2017	0.122294
HLGAPDV	9	12/31/2017	0.309553	KAPTRFD	12	12/31/2017	0.122294

FUND	ID	DATE	CRFRH	FUND	ID	DATE	CRFRH
OSKASGO	13	3/31/2015	0.167242	PACGAIR	16	3/31/2015	-0.09046
OSKASGO	13	6/30/2015	0.167242	PACGAIR	16	6/30/2015	-0.09046
OSKASGO	13	9/30/2015	0.167242	PACGAIR	16	9/30/2015	-0.09046
OSKASGO	13	12/31/2015	0.167242	PACGAIR	16	12/31/2015	-0.09046
OSKASGO	13	3/31/2016	0.167242	PACGAIR	16	3/31/2016	-0.09046
OSKASGO	13	6/30/2016	0.167242	PACGAIR	16	6/30/2016	-0.09046
OSKASGO	13	9/30/2016	0.167242	PACGAIR	16	9/30/2016	-0.09046
OSKASGO	13	12/31/2016	0.167242	PACGAIR	16	12/31/2016	-0.09046
OSKASGO	13	3/31/2017	0.167242	PACGAIR	16	3/31/2017	-0.09046
OSKASGO	13	6/30/2017	0.167242	PACGAIR	16	6/30/2017	-0.09046
OSKASGO	13	9/30/2017	0.167242	PACGAIR	16	9/30/2017	-0.09046
OSKASGO	13	12/31/2017	0.167242	PACGAIR	16	12/31/2017	-0.09046
OSKUOBE	14	3/31/2015	0.149217	PHASJEP	17	3/31/2015	0.421361
OSKUOBE	14	6/30/2015	0.149217	PHASJEP	17	6/30/2015	0.421361
OSKUOBE	14	9/30/2015	0.149217	PHASJEP	17	9/30/2015	0.421361
OSKUOBE	14	12/31/2015	0.149217	PHASJEP	17	12/31/2015	0.421361
OSKUOBE	14	3/31/2016	0.149217	PHASJEP	17	3/31/2016	0.421361
OSKUOBE	14	6/30/2016	0.149217	PHASJEP	17	6/30/2016	0.421361
OSKUOBE	14	9/30/2016	0.149217	PHASJEP	17	9/30/2016	0.421361
OSKUOBE	14	12/31/2016	0.149217	PHASJEP	17	12/31/2016	0.421361
OSKUOBE	14	3/31/2017	0.149217	PHASJEP	17	3/31/2017	0.421361
OSKUOBE	14	6/30/2017	0.149217	PHASJEP	17	6/30/2017	0.421361
OSKUOBE	14	9/30/2017	0.149217	PHASJEP	17	9/30/2017	0.421361
OSKUOBE	14	12/31/2017	0.149217	PHASJEP	17	12/31/2017	0.421361
PACF018	15	3/31/2015	0.011543	PRUAPEF	18	3/31/2015	0.07609
PACF018	15	6/30/2015	0.011543	PRUAPEF	18	6/30/2015	0.07609
PACF018	15	9/30/2015	0.011543	PRUAPEF	18	9/30/2015	0.07609
PACF018	15	12/31/2015	0.011543	PRUAPEF	18	12/31/2015	0.07609
PACF018	15	3/31/2016	0.011543	PRUAPEF	18	3/31/2016	0.07609
PACF018	15	6/30/2016	0.011543	PRUAPEF	18	6/30/2016	0.07609
PACF018	15	9/30/2016	0.011543	PRUAPEF	18	9/30/2016	0.07609
PACF018	15	12/31/2016	0.011543	PRUAPEF	18	12/31/2016	0.07609
PACF018	15	3/31/2017	0.011543	PRUAPEF	18	3/31/2017	0.07609
PACF018	15	6/30/2017	0.011543	PRUAPEF	18	6/30/2017	0.07609
PACF018	15	9/30/2017	0.011543	PRUAPEF	18	9/30/2017	0.07609
PACF018	15	12/31/2017	0.011543	PRUAPEF	18	12/31/2017	0.07609

FUND	ID	DATE	CRFRH	FUND	ID	DATE	CRFRH
SAFFSAM	19	3/31/2015	0.152628	TAABNUT	22	3/31/2015	0.201883
SAFFSAM	19	6/30/2015	0.152628	TAABNUT	22	6/30/2015	0.201883
SAFFSAM	19	9/30/2015	0.152628	TAABNUT	22	9/30/2015	0.201883
SAFFSAM	19	12/31/2015	0.152628	TAABNUT	22	12/31/2015	0.201883
SAFFSAM	19	3/31/2016	0.152628	TAABNUT	22	3/31/2016	0.201883
SAFFSAM	19	6/30/2016	0.152628	TAABNUT	22	6/30/2016	0.201883
SAFFSAM	19	9/30/2016	0.152628	TAABNUT	22	9/30/2016	0.201883
SAFFSAM	19	12/31/2016	0.152628	TAABNUT	22	12/31/2016	0.201883
SAFFSAM	19	3/31/2017	0.152628	TAABNUT	22	3/31/2017	0.201883
SAFFSAM	19	6/30/2017	0.152628	TAABNUT	22	6/30/2017	0.201883
SAFFSAM	19	9/30/2017	0.152628	TAABNUT	22	9/30/2017	0.201883
SAFFSAM	19	12/31/2017	0.152628	TAABNUT	22	12/31/2017	0.201883
SBBAEQF	20	3/31/2015	0.038665				
SBBAEQF	20	6/30/2015	0.038665				
SBBAEQF	20	9/30/2015	0.038665				
SBBAEQF	20	12/31/2015	0.038665				
SBBAEQF	20	3/31/2016	0.038665				
SBBAEQF	20	6/30/2016	0.038665				
SBBAEQF	20	9/30/2016	0.038665				
SBBAEQF	20	12/31/2016	0.038665				
SBBAEQF	20	3/31/2017	0.038665				
SBBAEQF	20	6/30/2017	0.038665				
SBBAEQF	20	9/30/2017	0.038665				
SBBAEQF	20	12/31/2017	0.038665				
SBBEQIF	21	3/31/2015	-0.418944				
SBBEQIF	21	6/30/2015	-0.418944				
SBBEQIF	21	9/30/2015	-0.418944				
SBBEQIF	21	12/31/2015	-0.418944				
SBBEQIF	21	3/31/2016	-0.418944				
SBBEQIF	21	6/30/2016	-0.418944				
SBBEQIF	21	9/30/2016	-0.418944				
SBBEQIF	21	12/31/2016	-0.418944				
SBBEQIF	21	3/31/2017	-0.418944				
SBBEQIF	21	6/30/2017	-0.418944				
SBBEQIF	21	9/30/2017	-0.418944				
SBBEQIF	21	12/31/2017	-0.418944				

Appendix 2.4: Data of EXPR

FUND	ID	DATE	EXPR	FUND	ID	DATE	EXPR
ABMLCUI	1	3/31/2015	2.28	AMAPLDV	4	3/31/2015	1.95
ABMLCUI	1	6/30/2015	2.28	AMAPLDV	4	6/30/2015	1.95
ABMLCUI	1	9/30/2015	2.28	AMAPLDV	4	9/30/2015	1.95
ABMLCUI	1	12/31/2015	2.28	AMAPLDV	4	12/31/2015	1.95
ABMLCUI	1	3/31/2016	2.28	AMAPLDV	4	3/31/2016	1.95
ABMLCUI	1	6/30/2016	2.28	AMAPLDV	4	6/30/2016	1.95
ABMLCUI	1	9/30/2016	2.28	AMAPLDV	4	9/30/2016	1.95
ABMLCUI	1	12/31/2016	2.28	AMAPLDV	4	12/31/2016	1.95
ABMLCUI	1	3/31/2017	2.28	AMAPLDV	4	3/31/2017	1.95
ABMLCUI	1	6/30/2017	2.28	AMAPLDV	4	6/30/2017	1.95
ABMLCUI	1	9/30/2017	2.28	AMAPLDV	4	9/30/2017	1.95
ABMLCUI	1	12/31/2017	2.28	AMAPLDV	4	12/31/2017	1.95
AMMAPJD	2	3/31/2015	0.32	APASXJP	5	3/31/2015	-
AMMAPJD	2	6/30/2015	0.32	APASXJP	5	6/30/2015	-
AMMAPJD	2	9/30/2015	0.32	APASXJP	5	9/30/2015	-
AMMAPJD	2	12/31/2015	0.32	APASXJP	5	12/31/2015	-
AMMAPJD	2	3/31/2016	0.32	APASXJP	5	3/31/2016	2.63
AMMAPJD	2	6/30/2016	0.32	APASXJP	5	6/30/2016	2.63
AMMAPJD	2	9/30/2016	0.32	APASXJP	5	9/30/2016	2.63
AMMAPJD	2	12/31/2016	0.32	APASXJP	5	12/31/2016	2.63
AMMAPJD	2	3/31/2017	0.32	APASXJP	5	3/31/2017	2.63
AMMAPJD	2	6/30/2017	0.32	APASXJP	5	6/30/2017	2.63
AMMAPJD	2	9/30/2017	0.32	APASXJP	5	9/30/2017	2.63
AMMAPJD	2	12/31/2017	0.32	APASXJP	5	12/31/2017	2.63
AMAPEQI	3	3/31/2015	0.42	AVECLAS	6	3/31/2015	2.39
AMAPEQI	3	6/30/2015	0.42	AVECLAS	6	6/30/2015	2.39
AMAPEQI	3	9/30/2015	0.42	AVECLAS	6	9/30/2015	2.39
AMAPEQI	3	12/31/2015	0.42	AVECLAS	6	12/31/2015	2.39
AMAPEQI	3	3/31/2016	0.42	AVECLAS	6	3/31/2016	2.39
AMAPEQI	3	6/30/2016	0.42	AVECLAS	6	6/30/2016	2.39
AMAPEQI	3	9/30/2016	0.42	AVECLAS	6	9/30/2016	2.39
AMAPEQI	3	12/31/2016	0.42	AVECLAS	6	12/31/2016	2.39
AMAPEQI	3	3/31/2017	0.42	AVECLAS	6	3/31/2017	2.39
AMAPEQI	3	6/30/2017	0.42	AVECLAS	6	6/30/2017	2.39
AMAPEQI	3	9/30/2017	0.42	AVECLAS	6	9/30/2017	2.39
AMAPEQI	3	12/31/2017	0.42	AVECLAS	6	12/31/2017	2.63

FUND	ID	DATE	EXPR	FUND	ID	DATE	EXPR
BPTDGFI	7	3/31/2015	2.02	HWAGLOP	10	3/31/2015	1.79
BPTDGFI	7	6/30/2015	2.02	HWAGLOP	10	6/30/2015	1.79
BPTDGFI	7	9/30/2015	2.02	HWAGLOP	10	9/30/2015	1.79
BPTDGFI	7	12/31/2015	2.02	HWAGLOP	10	12/31/2015	1.79
BPTDGFI	7	3/31/2016	2.02	HWAGLOP	10	3/31/2016	1.79
BPTDGFI	7	6/30/2016	2.02	HWAGLOP	10	6/30/2016	1.79
BPTDGFI	7	9/30/2016	2.02	HWAGLOP	10	9/30/2016	1.79
BPTDGFI	7	12/31/2016	2.02	HWAGLOP	10	12/31/2016	1.79
BPTDGFI	7	3/31/2017	2.02	HWAGLOP	10	3/31/2017	1.79
BPTDGFI	7	6/30/2017	2.02	HWAGLOP	10	6/30/2017	1.79
BPTDGFI	7	9/30/2017	2.02	HWAGLOP	10	9/30/2017	1.79
BPTDGFI	7	12/31/2017	2.02	HWAGLOP	10	12/31/2017	1.79
CPASPDI	8	3/31/2015	2.01	HWASCAP	11	3/31/2015	1.8
CPASPDI	8	6/30/2015	2.01	HWASCAP	11	6/30/2015	1.8
CPASPDI	8	9/30/2015	2.01	HWASCAP	11	9/30/2015	1.8
CPASPDI	8	12/31/2015	2.01	HWASCAP	11	12/31/2015	1.8
CPASPDI	8	3/31/2016	2.01	HWASCAP	11	3/31/2016	1.8
CPASPDI	8	6/30/2016	2.01	HWASCAP	11	6/30/2016	1.8
CPASPDI	8	9/30/2016	2.01	HWASCAP	11	9/30/2016	1.8
CPASPDI	8	12/31/2016	2.01	HWASCAP	11	12/31/2016	1.8
CPASPDI	8	3/31/2017	2.01	HWASCAP	11	3/31/2017	1.8
CPASPDI	8	6/30/2017	2.01	HWASCAP	11	6/30/2017	1.8
CPASPDI	8	9/30/2017	2.01	HWASCAP	11	9/30/2017	1.8
CPASPDI	8	12/31/2017	2.01	HWASCAP	11	12/31/2017	1.8
HLGAPDV	9	3/31/2015	1.77	KAPTRFD	12	3/31/2015	1.98
HLGAPDV	9	6/30/2015	1.77	KAPTRFD	12	6/30/2015	1.98
HLGAPDV	9	9/30/2015	1.77	KAPTRFD	12	9/30/2015	1.98
HLGAPDV	9	12/31/2015	1.77	KAPTRFD	12	12/31/2015	1.98
HLGAPDV	9	3/31/2016	1.77	KAPTRFD	12	3/31/2016	1.98
HLGAPDV	9	6/30/2016	1.77	KAPTRFD	12	6/30/2016	1.98
HLGAPDV	9	9/30/2016	1.77	KAPTRFD	12	9/30/2016	1.98
HLGAPDV	9	12/31/2016	1.77	KAPTRFD	12	12/31/2016	1.98
HLGAPDV	9	3/31/2017	1.77	KAPTRFD	12	3/31/2017	1.98
HLGAPDV	9	6/30/2017	1.77	KAPTRFD	12	6/30/2017	1.98
HLGAPDV	9	9/30/2017	1.77	KAPTRFD	12	9/30/2017	1.98
HLGAPDV	9	12/31/2017	1.77	KAPTRFD	12	12/31/2017	1.98

FUND	ID	DATE	EXPR	FUND	ID	DATE	EXPR
OSKASGO	13	3/31/2015	0.77	PACGAIR	16	3/31/2015	3.52
OSKASGO	13	6/30/2015	0.77	PACGAIR	16	6/30/2015	3.52
OSKASGO	13	9/30/2015	0.77	PACGAIR	16	9/30/2015	3.52
OSKASGO	13	12/31/2015	0.77	PACGAIR	16	12/31/2015	3.52
OSKASGO	13	3/31/2016	0.77	PACGAIR	16	3/31/2016	3.52
OSKASGO	13	6/30/2016	0.77	PACGAIR	16	6/30/2016	3.52
OSKASGO	13	9/30/2016	0.77	PACGAIR	16	9/30/2016	3.52
OSKASGO	13	12/31/2016	0.77	PACGAIR	16	12/31/2016	3.52
OSKASGO	13	3/31/2017	0.77	PACGAIR	16	3/31/2017	3.52
OSKASGO	13	6/30/2017	0.77	PACGAIR	16	6/30/2017	3.52
OSKASGO	13	9/30/2017	0.77	PACGAIR	16	9/30/2017	3.52
OSKASGO	13	12/31/2017	0.77	PACGAIR	16	12/31/2017	3.52
OSKUOBE	14	3/31/2015	1.8	PHASJEP	17	3/31/2015	2.07
OSKUOBE	14	6/30/2015	1.8	PHASJEP	17	6/30/2015	2.07
OSKUOBE	14	9/30/2015	1.8	PHASJEP	17	9/30/2015	2.07
OSKUOBE	14	12/31/2015	1.8	PHASJEP	17	12/31/2015	2.07
OSKUOBE	14	3/31/2016	1.8	PHASJEP	17	3/31/2016	2.07
OSKUOBE	14	6/30/2016	1.8	PHASJEP	17	6/30/2016	2.07
OSKUOBE	14	9/30/2016	1.8	PHASJEP	17	9/30/2016	2.07
OSKUOBE	14	12/31/2016	1.8	PHASJEP	17	12/31/2016	2.07
OSKUOBE	14	3/31/2017	1.8	PHASJEP	17	3/31/2017	2.07
OSKUOBE	14	6/30/2017	1.8	PHASJEP	17	6/30/2017	2.07
OSKUOBE	14	9/30/2017	1.8	PHASJEP	17	9/30/2017	2.07
OSKUOBE	14	12/31/2017	1.8	PHASJEP	17	12/31/2017	2.07
PACF018	15	3/31/2015	2.31	PRUAPEF	18	3/31/2015	2.29
PACF018	15	6/30/2015	2.31	PRUAPEF	18	6/30/2015	2.29
PACF018	15	9/30/2015	2.31	PRUAPEF	18	9/30/2015	2.29
PACF018	15	12/31/2015	2.31	PRUAPEF	18	12/31/2015	2.29
PACF018	15	3/31/2016	2.31	PRUAPEF	18	3/31/2016	2.29
PACF018	15	6/30/2016	2.31	PRUAPEF	18	6/30/2016	2.29
PACF018	15	9/30/2016	2.31	PRUAPEF	18	9/30/2016	2.29
PACF018	15	12/31/2016	2.31	PRUAPEF	18	12/31/2016	2.29
PACF018	15	3/31/2017	2.31	PRUAPEF	18	3/31/2017	2.29
PACF018	15	6/30/2017	2.31	PRUAPEF	18	6/30/2017	2.29
PACF018	15	9/30/2017	2.31	PRUAPEF	18	9/30/2017	2.29
PACF018	15	12/31/2017	2.31	PRUAPEF	18	12/31/2017	2.29

FUND	ID	DATE	EXPR	FUND	ID	DATE	EXPR
SAFFSAM	19	3/31/2015	2.1	TAABNUT	22	3/31/2015	0.92
SAFFSAM	19	6/30/2015	2.1	TAABNUT	22	6/30/2015	0.92
SAFFSAM	19	9/30/2015	2.1	TAABNUT	22	9/30/2015	0.92
SAFFSAM	19	12/31/2015	2.1	TAABNUT	22	12/31/2015	0.92
SAFFSAM	19	3/31/2016	2.1	TAABNUT	22	3/31/2016	0.92
SAFFSAM	19	6/30/2016	2.1	TAABNUT	22	6/30/2016	0.92
SAFFSAM	19	9/30/2016	2.1	TAABNUT	22	9/30/2016	0.92
SAFFSAM	19	12/31/2016	2.1	TAABNUT	22	12/31/2016	0.92
SAFFSAM	19	3/31/2017	2.1	TAABNUT	22	3/31/2017	0.92
SAFFSAM	19	6/30/2017	2.1	TAABNUT	22	6/30/2017	0.92
SAFFSAM	19	9/30/2017	2.1	TAABNUT	22	9/30/2017	0.92
SAFFSAM	19	12/31/2017	2.1	TAABNUT	22	12/31/2017	0.92
SBBAEQF	20	3/31/2015	2.22				
SBBAEQF	20	6/30/2015	2.22				
SBBAEQF	20	9/30/2015	2.22				
SBBAEQF	20	12/31/2015	2.22				
SBBAEQF	20	3/31/2016	2.22				
SBBAEQF	20	6/30/2016	2.22				
SBBAEQF	20	9/30/2016	2.22				
SBBAEQF	20	12/31/2016	2.22				
SBBAEQF	20	3/31/2017	2.22				
SBBAEQF	20	6/30/2017	2.22				
SBBAEQF	20	9/30/2017	2.22				
SBBAEQF	20	12/31/2017	2.22				
SBBEQIF	21	3/31/2015	2.32				
SBBEQIF	21	6/30/2015	2.32				
SBBEQIF	21	9/30/2015	2.32				
SBBEQIF	21	12/31/2015	2.32				
SBBEQIF	21	3/31/2016	2.32				
SBBEQIF	21	6/30/2016	2.32				
SBBEQIF	21	9/30/2016	2.32				
SBBEQIF	21	12/31/2016	2.32				
SBBEQIF	21	3/31/2017	2.32				
SBBEQIF	21	6/30/2017	2.32				
SBBEQIF	21	9/30/2017	2.32				
SBBEQIF	21	12/31/2017	2.32				

Appendix 2.5: Data of FFLOW

FUND	ID	DATE	FFLOW	FUND	ID	DATE	FFLOW
ABMLCUI	1	3/31/2015	0.049493131	AMAPLDV	4	3/31/2015	0.013903751
ABMLCUI	1	6/30/2015	0.061657473	AMAPLDV	4	6/30/2015	-0.016684557
ABMLCUI	1	9/30/2015	-0.047567442	AMAPLDV	4	9/30/2015	-0.026724595
ABMLCUI	1	12/31/2015	0.031665697	AMAPLDV	4	12/31/2015	0.075624422
ABMLCUI	1	3/31/2016	-0.127498375	AMAPLDV	4	3/31/2016	-0.070047581
ABMLCUI	1	6/30/2016	0.043307438	AMAPLDV	4	6/30/2016	0.000681894
ABMLCUI	1	9/30/2016	0.060976435	AMAPLDV	4	9/30/2016	0.04225059
ABMLCUI	1	12/31/2016	0.012886531	AMAPLDV	4	12/31/2016	-0.007976762
ABMLCUI	1	3/31/2017	0.054710237	AMAPLDV	4	3/31/2017	0.031537234
ABMLCUI	1	6/30/2017	0.016142992	AMAPLDV	4	6/30/2017	0.00833718
ABMLCUI	1	9/30/2017	0.087261675	AMAPLDV	4	9/30/2017	-0.004148127
ABMLCUI	1	12/31/2017	0.058728187	AMAPLDV	4	12/31/2017	0.047682741
AMMAPJD	2	3/31/2015	0.087305354	APASXJP	5	3/31/2015	-
AMMAPJD	2	6/30/2015	-0.020588455	APASXJP	5	6/30/2015	-
AMMAPJD	2	9/30/2015	-0.037567864	APASXJP	5	9/30/2015	-
AMMAPJD	2	12/31/2015	0.011604253	APASXJP	5	12/31/2015	-
AMMAPJD	2	3/31/2016	-0.087331492	APASXJP	5	3/31/2016	-0.116430976
AMMAPJD	2	6/30/2016	0.008159083	APASXJP	5	6/30/2016	0.008925059
AMMAPJD	2	9/30/2016	0.080102298	APASXJP	5	9/30/2016	0.077951314
AMMAPJD	2	12/31/2016	0.045650517	APASXJP	5	12/31/2016	0.056621163
AMMAPJD	2	3/31/2017	0.083413695	APASXJP	5	3/31/2017	0.088004536
AMMAPJD	2	6/30/2017	-0.017931346	APASXJP	5	6/30/2017	0.012001696
AMMAPJD	2	9/30/2017	0.035748867	APASXJP	5	9/30/2017	0.062786777
AMMAPJD	2	12/31/2017	-0.001169946	APASXJP	5	12/31/2017	3.27E-05
AMAPEQI	3	3/31/2015	0.003715188	AVECLAS	6	3/31/2015	0.07623135
AMAPEQI	3	6/30/2015	0.05594945	AVECLAS	6	6/30/2015	0.105869488
AMAPEQI	3	9/30/2015	-0.124799677	AVECLAS	6	9/30/2015	-0.080198499
AMAPEQI	3	12/31/2015	-0.012662531	AVECLAS	6	12/31/2015	0.0369
AMAPEQI	3	3/31/2016	-0.138646116	AVECLAS	6	3/31/2016	-0.070967614
AMAPEQI	3	6/30/2016	0.014521147	AVECLAS	6	6/30/2016	0.071229407
AMAPEQI	3	9/30/2016	0.065032676	AVECLAS	6	9/30/2016	0.023030031
AMAPEQI	3	12/31/2016	-0.012999447	AVECLAS	6	12/31/2016	0.005023288
AMAPEQI	3	3/31/2017	0.09800147	AVECLAS	6	3/31/2017	0.014436306
AMAPEQI	3	6/30/2017	-0.014730698	AVECLAS	6	6/30/2017	0.00997218
AMAPEQI	3	9/30/2017	0.068500158	AVECLAS	6	9/30/2017	-0.057876732
AMAPEQI	3	12/31/2017	0.010322265	AVECLAS	6	12/31/2017	-0.048389823

FUND	ID	DATE	FFLOW	FUND	ID	DATE	FFLOW
BPTDGFI	7	3/31/2015	0.060293131	HWAGLOP	10	3/31/2015	0.059662551
BPTDGFI	7	6/30/2015	0.059757473	HWAGLOP	10	6/30/2015	0.04133934
BPTDGFI	7	9/30/2015	-0.044267442	HWAGLOP	10	9/30/2015	-0.0444898
BPTDGFI	7	12/31/2015	0.016065697	HWAGLOP	10	12/31/2015	0.009596174
BPTDGFI	7	3/31/2016	-0.127898375	HWAGLOP	10	3/31/2016	-0.043173246
BPTDGFI	7	6/30/2016	0.026507438	HWAGLOP	10	6/30/2016	0.0405564
BPTDGFI	7	9/30/2016	0.071676435	HWAGLOP	10	9/30/2016	0.064882741
BPTDGFI	7	12/31/2016	-0.001613469	HWAGLOP	10	12/31/2016	0.014554175
BPTDGFI	7	3/31/2017	0.031810237	HWAGLOP	10	3/31/2017	0.083966156
BPTDGFI	7	6/30/2017	0.030142992	HWAGLOP	10	6/30/2017	0.020463127
BPTDGFI	7	9/30/2017	0.091261675	HWAGLOP	10	9/30/2017	0.056948491
BPTDGFI	7	12/31/2017	0.036128187	HWAGLOP	10	12/31/2017	0.031491741
CPASPDI	8	3/31/2015	0.07031902	HWASCAP	11	3/31/2015	0.055244702
CPASPDI	8	6/30/2015	-0.027787071	HWASCAP	11	6/30/2015	0.050691648
CPASPDI	8	9/30/2015	-0.022614585	HWASCAP	11	9/30/2015	-0.052574282
CPASPDI	8	12/31/2015	-0.027951784	HWASCAP	11	12/31/2015	-0.016346313
CPASPDI	8	3/31/2016	-0.067802755	HWASCAP	11	3/31/2016	-0.052266047
CPASPDI	8	6/30/2016	0.05409153	HWASCAP	11	6/30/2016	0.054762709
CPASPDI	8	9/30/2016	0.067428385	HWASCAP	11	9/30/2016	0.095118915
CPASPDI	8	12/31/2016	0.008227653	HWASCAP	11	12/31/2016	-0.043861505
CPASPDI	8	3/31/2017	0.063309091	HWASCAP	11	3/31/2017	0.109154572
CPASPDI	8	6/30/2017	0.008079196	HWASCAP	11	6/30/2017	0.002052985
CPASPDI	8	9/30/2017	0.032903232	HWASCAP	11	9/30/2017	-0.037205364
CPASPDI	8	12/31/2017	0.030618381	HWASCAP	11	12/31/2017	-0.0483481
HLGAPDV	9	3/31/2015	0.029020111	KAPTRFD	12	3/31/2015	0.077962437
HLGAPDV	9	6/30/2015	-0.010245605	KAPTRFD	12	6/30/2015	0.044563087
HLGAPDV	9	9/30/2015	-0.080523183	KAPTRFD	12	9/30/2015	-0.045015121
HLGAPDV	9	12/31/2015	0.062468481	KAPTRFD	12	12/31/2015	-0.007278513
HLGAPDV	9	3/31/2016	-0.072161751	KAPTRFD	12	3/31/2016	-0.082245379
HLGAPDV	9	6/30/2016	-0.005736043	KAPTRFD	12	6/30/2016	0.041747715
HLGAPDV	9	9/30/2016	0.070716494	KAPTRFD	12	9/30/2016	0.052390333
HLGAPDV	9	12/31/2016	0.010114618	KAPTRFD	12	12/31/2016	0.017634244
HLGAPDV	9	3/31/2017	0.068654685	KAPTRFD	12	3/31/2017	0.057477759
HLGAPDV	9	6/30/2017	0.0107656	KAPTRFD	12	6/30/2017	0.009072483
HLGAPDV	9	9/30/2017	0.030859679	KAPTRFD	12	9/30/2017	0.018157044
HLGAPDV	9	12/31/2017	-0.026547456	KAPTRFD	12	12/31/2017	0.011469492

FUND	ID	DATE	FFLOW	FUND	ID	DATE	FFLOW
OSKASGO	13	3/31/2015	0.051757537	PACGAIR	16	3/31/2015	0.063478508
OSKASGO	13	6/30/2015	0.05020847	PACGAIR	16	6/30/2015	0.03476629
OSKASGO	13	9/30/2015	-0.056477423	PACGAIR	16	9/30/2015	-0.0965386
OSKASGO	13	12/31/2015	0.016510411	PACGAIR	16	12/31/2015	0.029374382
OSKASGO	13	3/31/2016	-0.090300366	PACGAIR	16	3/31/2016	-0.041282856
OSKASGO	13	6/30/2016	0.059705533	PACGAIR	16	6/30/2016	0.040228992
OSKASGO	13	9/30/2016	0.082785714	PACGAIR	16	9/30/2016	0.05041715
OSKASGO	13	12/31/2016	0.015680793	PACGAIR	16	12/31/2016	0.037075841
OSKASGO	13	3/31/2017	0.067333128	PACGAIR	16	3/31/2017	0.049126166
OSKASGO	13	6/30/2017	-0.010688579	PACGAIR	16	6/30/2017	-0.050076712
OSKASGO	13	9/30/2017	0.029434237	PACGAIR	16	9/30/2017	0.017774888
OSKASGO	13	12/31/2017	-0.007655185	PACGAIR	16	12/31/2017	-0.03192244
OSKUOBE	14	3/31/2015	0.040925159	PHASJEP	17	3/31/2015	0.045481902
OSKUOBE	14	6/30/2015	-0.034279509	PHASJEP	17	6/30/2015	0.038179685
OSKUOBE	14	9/30/2015	-0.148704368	PHASJEP	17	9/30/2015	-0.075020301
OSKUOBE	14	12/31/2015	-0.130186185	PHASJEP	17	12/31/2015	0.05334798
OSKUOBE	14	3/31/2016	-0.052367698	PHASJEP	17	3/31/2016	-0.078002627
OSKUOBE	14	6/30/2016	0.00339566	PHASJEP	17	6/30/2016	-0.006761871
OSKUOBE	14	9/30/2016	-0.160803308	PHASJEP	17	9/30/2016	0.038583579
OSKUOBE	14	12/31/2016	-0.168030422	PHASJEP	17	12/31/2016	0.000403433
OSKUOBE	14	3/31/2017	0.0925249	PHASJEP	17	3/31/2017	0.07398592
OSKUOBE	14	6/30/2017	-0.00135486	PHASJEP	17	6/30/2017	0.006273495
OSKUOBE	14	9/30/2017	-0.041990604	PHASJEP	17	9/30/2017	0.00692953
OSKUOBE	14	12/31/2017	-0.191698886	PHASJEP	17	12/31/2017	0.018067072
PACF018	15	3/31/2015	0.060707324	PRUAPEF	18	3/31/2015	0.06467405
PACF018	15	6/30/2015	0.031490431	PRUAPEF	18	6/30/2015	0.020826207
PACF018	15	9/30/2015	-0.080179032	PRUAPEF	18	9/30/2015	-0.067823604
PACF018	15	12/31/2015	0.013122195	PRUAPEF	18	12/31/2015	-0.00366895
PACF018	15	3/31/2016	-0.088485855	PRUAPEF	18	3/31/2016	-0.125942214
PACF018	15	6/30/2016	-0.023076529	PRUAPEF	18	6/30/2016	0.015557644
PACF018	15	9/30/2016	0.041626504	PRUAPEF	18	9/30/2016	0.101259184
PACF018	15	12/31/2016	-0.03759123	PRUAPEF	18	12/31/2016	0.037266667
PACF018	15	3/31/2017	0.072245104	PRUAPEF	18	3/31/2017	0.10751055
PACF018	15	6/30/2017	-0.05092687	PRUAPEF	18	6/30/2017	-0.01473093
PACF018	15	9/30/2017	-0.054481832	PRUAPEF	18	9/30/2017	0.059379758
PACF018	15	12/31/2017	0.000233333	PRUAPEF	18	12/31/2017	0.003476873

FUND	ID	DATE	FFLOW	FUND	ID	DATE	FFLOW
SAFFSAM	19	3/31/2015	2.1	TAABNUT	22	3/31/2015	0.052100615
SAFFSAM	19	6/30/2015	2.1	TAABNUT	22	6/30/2015	0.014973117
SAFFSAM	19	9/30/2015	2.1	TAABNUT	22	9/30/2015	-0.051292861
SAFFSAM	19	12/31/2015	2.1	TAABNUT	22	12/31/2015	-0.009551251
SAFFSAM	19	3/31/2016	2.1	TAABNUT	22	3/31/2016	-0.103731343
SAFFSAM	19	6/30/2016	2.1	TAABNUT	22	6/30/2016	0.037056653
SAFFSAM	19	9/30/2016	2.1	TAABNUT	22	9/30/2016	0.037206053
SAFFSAM	19	12/31/2016	2.1	TAABNUT	22	12/31/2016	0.014140419
SAFFSAM	19	3/31/2017	2.1	TAABNUT	22	3/31/2017	0.047007264
SAFFSAM	19	6/30/2017	2.1	TAABNUT	22	6/30/2017	-0.014489354
SAFFSAM	19	9/30/2017	2.1	TAABNUT	22	9/30/2017	0.01077672
SAFFSAM	19	12/31/2017	2.1	TAABNUT	22	12/31/2017	-0.022911358
SBBAEQF	20	3/31/2015	2.22				
SBBAEQF	20	6/30/2015	2.22				
SBBAEQF	20	9/30/2015	2.22				
SBBAEQF	20	12/31/2015	2.22				
SBBAEQF	20	3/31/2016	2.22				
SBBAEQF	20	6/30/2016	2.22				
SBBAEQF	20	9/30/2016	2.22				
SBBAEQF	20	12/31/2016	2.22				
SBBAEQF	20	3/31/2017	2.22				
SBBAEQF	20	6/30/2017	2.22				
SBBAEQF	20	9/30/2017	2.22				
SBBAEQF	20	12/31/2017	2.22				
SBBEQIF	21	3/31/2015	2.32				
SBBEQIF	21	6/30/2015	2.32				
SBBEQIF	21	9/30/2015	2.32				
SBBEQIF	21	12/31/2015	2.32				
SBBEQIF	21	3/31/2016	2.32				
SBBEQIF	21	6/30/2016	2.32				
SBBEQIF	21	9/30/2016	2.32				
SBBEQIF	21	12/31/2016	2.32				
SBBEQIF	21	3/31/2017	2.32				
SBBEQIF	21	6/30/2017	2.32				
SBBEQIF	21	9/30/2017	2.32				
SBBEQIF	21	12/31/2017	2.32				

Appendix 2.6: Data of FMS

FUND	ID	DATE	FMS	FUND	ID	DATE	FMS
ABMLCUI	1	3/31/2015	13.98656057	AMAPLDV	4	3/31/2015	10.42518781
ABMLCUI	1	6/30/2015	10.2083879	AMAPLDV	4	6/30/2015	-7.483700484
ABMLCUI	1	9/30/2015	-6.72958372	AMAPLDV	4	9/30/2015	-9.427244293
ABMLCUI	1	12/31/2015	8.617084327	AMAPLDV	4	12/31/2015	26.50370211
ABMLCUI	1	3/31/2016	-24.54219757	AMAPLDV	4	3/31/2016	-21.55854551
ABMLCUI	1	6/30/2016	7.700069605	AMAPLDV	4	6/30/2016	4.136948387
ABMLCUI	1	9/30/2016	14.786523	AMAPLDV	4	9/30/2016	21.95463321
ABMLCUI	1	12/31/2016	0.358306891	AMAPLDV	4	12/31/2016	-3.714037233
ABMLCUI	1	3/31/2017	10.67424484	AMAPLDV	4	3/31/2017	17.48909152
ABMLCUI	1	6/30/2017	4.503420489	AMAPLDV	4	6/30/2017	7.17288404
ABMLCUI	1	9/30/2017	17.51392772	AMAPLDV	4	9/30/2017	5.132344992
ABMLCUI	1	12/31/2017	13.35162673	AMAPLDV	4	12/31/2017	19.53146062
AMMAPJD	2	3/31/2015	16.18797358	APASXJP	5	3/31/2015	-
AMMAPJD	2	6/30/2015	0.743111815	APASXJP	5	6/30/2015	-
AMMAPJD	2	9/30/2015	-1.349272607	APASXJP	5	9/30/2015	-
AMMAPJD	2	12/31/2015	6.081902178	APASXJP	5	12/31/2015	-
AMMAPJD	2	3/31/2016	-10.14358124	APASXJP	5	3/31/2016	-57.65731633
AMMAPJD	2	6/30/2016	6.317107355	APASXJP	5	6/30/2016	8.029750402
AMMAPJD	2	9/30/2016	24.74047993	APASXJP	5	9/30/2016	53.20637426
AMMAPJD	2	12/31/2016	11.50457289	APASXJP	5	12/31/2016	13.6765296
AMMAPJD	2	3/31/2017	20.39641189	APASXJP	5	3/31/2017	51.43236567
AMMAPJD	2	6/30/2017	0.186701802	APASXJP	5	6/30/2017	9.033967167
AMMAPJD	2	9/30/2017	7.377894443	APASXJP	5	9/30/2017	24.88964509
AMMAPJD	2	12/31/2017	4.752781476	APASXJP	5	12/31/2017	4.573681912
AMAPEQI	3	3/31/2015	19.40730514	AVECLAS	6	3/31/2015	17.20708265
AMAPEQI	3	6/30/2015	17.93079623	AVECLAS	6	6/30/2015	23.122878
AMAPEQI	3	9/30/2015	-15.9099755	AVECLAS	6	9/30/2015	-13.09769019
AMAPEQI	3	12/31/2015	9.61045626	AVECLAS	6	12/31/2015	4.555956124
AMAPEQI	3	3/31/2016	-4.98986154	AVECLAS	6	3/31/2016	-10.43288541
AMAPEQI	3	6/30/2016	16.89101704	AVECLAS	6	6/30/2016	9.411675176
AMAPEQI	3	9/30/2016	25.41296292	AVECLAS	6	9/30/2016	9.4789787
AMAPEQI	3	12/31/2016	-0.850371768	AVECLAS	6	12/31/2016	4.661395549
AMAPEQI	3	3/31/2017	27.15312681	AVECLAS	6	3/31/2017	4.899936492
AMAPEQI	3	6/30/2017	1.298112063	AVECLAS	6	6/30/2017	2.078431673
AMAPEQI	3	9/30/2017	13.8713209	AVECLAS	6	9/30/2017	-14.51070312
AMAPEQI	3	12/31/2017	11.74331727	AVECLAS	6	12/31/2017	-11.69465066

FUND	ID	DATE	FMS	FUND	ID	DATE	FMS
BPTDGFI	7	3/31/2015	13.98656057	HWAGLOP	10	3/31/2015	25.17517278
BPTDGFI	7	6/30/2015	10.2083879	HWAGLOP	10	6/30/2015	10.91467185
BPTDGFI	7	9/30/2015	-6.72958372	HWAGLOP	10	9/30/2015	-4.140730058
BPTDGFI	7	12/31/2015	8.617084327	HWAGLOP	10	12/31/2015	-0.367952378
BPTDGFI	7	3/31/2016	-24.54219757	HWAGLOP	10	3/31/2016	-10.61267278
BPTDGFI	7	6/30/2016	7.700069605	HWAGLOP	10	6/30/2016	10.85673403
BPTDGFI	7	9/30/2016	14.786523	HWAGLOP	10	9/30/2016	21.12968799
BPTDGFI	7	12/31/2016	0.358306891	HWAGLOP	10	12/31/2016	0.057087534
BPTDGFI	7	3/31/2017	10.67424484	HWAGLOP	10	3/31/2017	26.39748449
BPTDGFI	7	6/30/2017	4.503420489	HWAGLOP	10	6/30/2017	7.495833525
BPTDGFI	7	9/30/2017	17.51392772	HWAGLOP	10	9/30/2017	16.15217711
BPTDGFI	7	12/31/2017	13.35162673	HWAGLOP	10	12/31/2017	9.811839395
CPASPDI	8	3/31/2015	44.12811015	HWASCAP	11	3/31/2015	11.85571377
CPASPDI	8	6/30/2015	-7.554682193	HWASCAP	11	6/30/2015	9.513556934
CPASPDI	8	9/30/2015	-0.854096431	HWASCAP	11	9/30/2015	1.258215632
CPASPDI	8	12/31/2015	-6.653546835	HWASCAP	11	12/31/2015	3.948538656
CPASPDI	8	3/31/2016	-40.50722992	HWASCAP	11	3/31/2016	-5.353898098
CPASPDI	8	6/30/2016	21.82303881	HWASCAP	11	6/30/2016	13.7358923
CPASPDI	8	9/30/2016	42.42999801	HWASCAP	11	9/30/2016	20.02737591
CPASPDI	8	12/31/2016	1.098426806	HWASCAP	11	12/31/2016	-5.171949966
CPASPDI	8	3/31/2017	35.52294443	HWASCAP	11	3/31/2017	26.01678874
CPASPDI	8	6/30/2017	21.49832041	HWASCAP	11	6/30/2017	5.82483762
CPASPDI	8	9/30/2017	7.507844666	HWASCAP	11	9/30/2017	-6.13910614
CPASPDI	8	12/31/2017	17.73541158	HWASCAP	11	12/31/2017	-7.156286437
HLGAPDV	9	3/31/2015	0.268614392	KAPTRFD	12	3/31/2015	16.30931945
HLGAPDV	9	6/30/2015	-9.65815869	KAPTRFD	12	6/30/2015	6.685014753
HLGAPDV	9	9/30/2015	-3.967427315	KAPTRFD	12	9/30/2015	-6.709800284
HLGAPDV	9	12/31/2015	30.32081953	KAPTRFD	12	12/31/2015	-2.615688694
HLGAPDV	9	3/31/2016	-14.22374977	KAPTRFD	12	3/31/2016	-18.38669475
HLGAPDV	9	6/30/2016	-1.498228828	KAPTRFD	12	6/30/2016	5.259590256
HLGAPDV	9	9/30/2016	29.50944315	KAPTRFD	12	9/30/2016	11.48158583
HLGAPDV	9	12/31/2016	-8.157504511	KAPTRFD	12	12/31/2016	1.564143584
HLGAPDV	9	3/31/2017	32.62696413	KAPTRFD	12	3/31/2017	10.26102143
HLGAPDV	9	6/30/2017	14.35289648	KAPTRFD	12	6/30/2017	1.737840438
HLGAPDV	9	9/30/2017	11.25995607	KAPTRFD	12	9/30/2017	4.108074573
HLGAPDV	9	12/31/2017	-4.171438728	KAPTRFD	12	12/31/2017	-0.428965593

FUND	ID	DATE	FMS	FUND	ID	DATE	FMS
OSKASGO	13	3/31/2015	19.51624099	PACGAIR	16	3/31/2015	15.31900541
OSKASGO	13	6/30/2015	10.35893271	PACGAIR	16	6/30/2015	7.172554892
OSKASGO	13	9/30/2015	-10.11034165	PACGAIR	16	9/30/2015	-29.00660691
OSKASGO	13	12/31/2015	3.84166988	PACGAIR	16	12/31/2015	6.33553653
OSKASGO	13	3/31/2016	-23.28684472	PACGAIR	16	3/31/2016	-10.19370419
OSKASGO	13	6/30/2016	12.89100351	PACGAIR	16	6/30/2016	14.06411053
OSKASGO	13	9/30/2016	27.91112433	PACGAIR	16	9/30/2016	20.73358097
OSKASGO	13	12/31/2016	0.825715405	PACGAIR	16	12/31/2016	12.44821095
OSKASGO	13	3/31/2017	18.45411852	PACGAIR	16	3/31/2017	17.14512648
OSKASGO	13	6/30/2017	0.775436048	PACGAIR	16	6/30/2017	-15.69878711
OSKASGO	13	9/30/2017	5.386552666	PACGAIR	16	9/30/2017	3.727622645
OSKASGO	13	12/31/2017	0.19341111	PACGAIR	16	12/31/2017	-11.55759298
OSKUOBE	14	3/31/2015	2.725376581	PHASJEP	17	3/31/2015	8.490514872
OSKUOBE	14	6/30/2015	-15.60495809	PHASJEP	17	6/30/2015	6.835695439
OSKUOBE	14	9/30/2015	-29.86729352	PHASJEP	17	9/30/2015	-13.39912266
OSKUOBE	14	12/31/2015	5.468939607	PHASJEP	17	12/31/2015	11.26256758
OSKUOBE	14	3/31/2016	-10.95283902	PHASJEP	17	3/31/2016	-12.78779346
OSKUOBE	14	6/30/2016	12.08539955	PHASJEP	17	6/30/2016	-2.736543277
OSKUOBE	14	9/30/2016	-43.4438438	PHASJEP	17	9/30/2016	11.61367127
OSKUOBE	14	12/31/2016	-50.52620428	PHASJEP	17	12/31/2016	0.524913049
OSKUOBE	14	3/31/2017	48.33180399	PHASJEP	17	3/31/2017	12.04084844
OSKUOBE	14	6/30/2017	1.627541279	PHASJEP	17	6/30/2017	2.297373824
OSKUOBE	14	9/30/2017	-12.42340357	PHASJEP	17	9/30/2017	5.569230874
OSKUOBE	14	12/31/2017	-66.19025993	PHASJEP	17	12/31/2017	5.288373756
PACF018	15	3/31/2015	17.94103085	PRUAPEF	18	3/31/2015	24.46904263
PACF018	15	6/30/2015	11.03608139	PRUAPEF	18	6/30/2015	10.56353894
PACF018	15	9/30/2015	-19.45229697	PRUAPEF	18	9/30/2015	-10.53316245
PACF018	15	12/31/2015	2.853185432	PRUAPEF	18	12/31/2015	6.772228143
PACF018	15	3/31/2016	-18.64726763	PRUAPEF	18	3/31/2016	-25.65503918
PACF018	15	6/30/2016	-10.97580185	PRUAPEF	18	6/30/2016	-0.860564807
PACF018	15	9/30/2016	17.32262768	PRUAPEF	18	9/30/2016	38.33732825
PACF018	15	12/31/2016	-11.50062158	PRUAPEF	18	12/31/2016	11.52014296
PACF018	15	3/31/2017	32.85716797	PRUAPEF	18	3/31/2017	36.87268203
PACF018	15	6/30/2017	-19.60601086	PRUAPEF	18	6/30/2017	2.072639249
PACF018	15	9/30/2017	-17.22156747	PRUAPEF	18	9/30/2017	20.0297415
PACF018	15	12/31/2017	9.669447374	PRUAPEF	18	12/31/2017	-0.39079941

FUND	ID	DATE	FMS	FUND	ID	DATE	FMS
SAFFSAM	19	3/31/2015	8.864694253	TAABNUT	22	3/31/2015	30.23175123
SAFFSAM	19	6/30/2015	18.45081146	TAABNUT	22	6/30/2015	10.30601305
SAFFSAM	19	9/30/2015	-13.47435334	TAABNUT	22	9/30/2015	-12.06970675
SAFFSAM	19	12/31/2015	4.743725743	TAABNUT	22	12/31/2015	9.566695469
SAFFSAM	19	3/31/2016	-18.27322749	TAABNUT	22	3/31/2016	-30.86995322
SAFFSAM	19	6/30/2016	5.288027808	TAABNUT	22	6/30/2016	18.05707954
SAFFSAM	19	9/30/2016	13.39805047	TAABNUT	22	9/30/2016	28.10746066
SAFFSAM	19	12/31/2016	-0.920557208	TAABNUT	22	12/31/2016	7.591931087
SAFFSAM	19	3/31/2017	6.501839585	TAABNUT	22	3/31/2017	30.74384501
SAFFSAM	19	6/30/2017	-2.168896612	TAABNUT	22	6/30/2017	4.616411531
SAFFSAM	19	9/30/2017	6.163074154	TAABNUT	22	9/30/2017	4.184386415
SAFFSAM	19	12/31/2017	6.042182254	TAABNUT	22	12/31/2017	1.447433825
SBBAEQF	20	3/31/2015	28.35771852				
SBBAEQF	20	6/30/2015	3.701939409				
SBBAEQF	20	9/30/2015	-8.800418614				
SBBAEQF	20	12/31/2015	-0.230928244				
SBBAEQF	20	3/31/2016	-23.47643192				
SBBAEQF	20	6/30/2016	13.24173887				
SBBAEQF	20	9/30/2016	29.17443508				
SBBAEQF	20	12/31/2016	-6.658168637				
SBBAEQF	20	3/31/2017	15.8808707				
SBBAEQF	20	6/30/2017	15.19243488				
SBBAEQF	20	9/30/2017	18.89634001				
SBBAEQF	20	12/31/2017	6.354486086				
SBBEQIF	21	3/31/2015	15.93005151				
SBBEQIF	21	6/30/2015	-1.7263502				
SBBEQIF	21	9/30/2015	-14.34165321				
SBBEQIF	21	12/31/2015	0.937129101				
SBBEQIF	21	3/31/2016	-12.24755277				
SBBEQIF	21	6/30/2016	2.041286363				
SBBEQIF	21	9/30/2016	-1.458463482				
SBBEQIF	21	12/31/2016	-4.277845033				
SBBEQIF	21	3/31/2017	16.34604797				
SBBEQIF	21	6/30/2017	10.64603892				
SBBEQIF	21	9/30/2017	-6.337766029				
SBBEQIF	21	12/31/2017	7.741433031				

Appendix 2.7: Data of NAV

FUND	ID	DATE	NAV	FUND	ID	DATE	NAV
ABMLCUI	1	3/31/2015	0.823	AMAPLDV	4	3/31/2015	0.4714
ABMLCUI	1	6/30/2015	0.86	AMAPLDV	4	6/30/2015	0.4501
ABMLCUI	1	9/30/2015	0.8387	AMAPLDV	4	9/30/2015	0.4324
ABMLCUI	1	12/31/2015	0.8614	AMAPLDV	4	12/31/2015	0.4651
ABMLCUI	1	3/31/2016	0.7744	AMAPLDV	4	3/31/2016	0.4308
ABMLCUI	1	6/30/2016	0.8012	AMAPLDV	4	6/30/2016	0.4323
ABMLCUI	1	9/30/2016	0.8672	AMAPLDV	4	9/30/2016	0.4596
ABMLCUI	1	12/31/2016	0.8645	AMAPLDV	4	12/31/2016	0.4512
ABMLCUI	1	3/31/2017	0.9239	AMAPLDV	4	3/31/2017	0.4731
ABMLCUI	1	6/30/2017	0.9657	AMAPLDV	4	6/30/2017	0.4831
ABMLCUI	1	9/30/2017	1.0519	AMAPLDV	4	9/30/2017	0.4867
ABMLCUI	1	12/31/2017	1.1324	AMAPLDV	4	12/31/2017	0.512
AMMAPJD	2	3/31/2015	1.3357	APASXJP	5	3/31/2015	-
AMMAPJD	2	6/30/2015	1.3082	APASXJP	5	6/30/2015	-
AMMAPJD	2	9/30/2015	1.2792	APASXJP	5	9/30/2015	-
AMMAPJD	2	12/31/2015	1.2943	APASXJP	5	12/31/2015	-
AMMAPJD	2	3/31/2016	1.2078	APASXJP	5	3/31/2016	0.2135
AMMAPJD	2	6/30/2016	1.2185	APASXJP	5	6/30/2016	0.2169
AMMAPJD	2	9/30/2016	1.354	APASXJP	5	9/30/2016	0.2391
AMMAPJD	2	12/31/2016	1.402	APASXJP	5	12/31/2016	0.2447
AMMAPJD	2	3/31/2017	1.5568	APASXJP	5	3/31/2017	0.2713
AMMAPJD	2	6/30/2017	1.5622	APASXJP	5	6/30/2017	0.2783
AMMAPJD	2	9/30/2017	1.6018	APASXJP	5	9/30/2017	0.2921
AMMAPJD	2	12/31/2017	1.6302	APASXJP	5	12/31/2017	0.2969
AMAPEQI	3	3/31/2015	0.9545	AVECLAS	6	3/31/2015	0.7951
AMAPEQI	3	6/30/2015	0.9912	AVECLAS	6	6/30/2015	0.8528
AMAPEQI	3	9/30/2015	0.8786	AVECLAS	6	9/30/2015	0.825
AMAPEQI	3	12/31/2015	0.8767	AVECLAS	6	12/31/2015	0.8448
AMAPEQI	3	3/31/2016	0.8266	AVECLAS	6	3/31/2016	0.8379
AMAPEQI	3	6/30/2016	0.8615	AVECLAS	6	6/30/2016	0.8701
AMAPEQI	3	9/30/2016	0.9407	AVECLAS	6	9/30/2016	0.9125
AMAPEQI	3	12/31/2016	0.9185	AVECLAS	6	12/31/2016	0.9117
AMAPEQI	3	3/31/2017	1.0222	AVECLAS	6	3/31/2017	0.9637
AMAPEQI	3	6/30/2017	1.0098	AVECLAS	6	6/30/2017	0.9842
AMAPEQI	3	9/30/2017	1.051	AVECLAS	6	9/30/2017	0.9109
AMAPEQI	3	12/31/2017	1.1	AVECLAS	6	12/31/2017	0.8742

FUND	ID	DATE	NAV	FUND	ID	DATE	NAV
BPTDGFI	7	3/31/2015	1.3565	HWAGLOP	10	3/31/2015	0.5333
BPTDGFI	7	6/30/2015	1.3269	HWAGLOP	10	6/30/2015	0.549
BPTDGFI	7	9/30/2015	1.2292	HWAGLOP	10	9/30/2015	0.5411
BPTDGFI	7	12/31/2015	1.2604	HWAGLOP	10	12/31/2015	0.5431
BPTDGFI	7	3/31/2016	1.2334	HWAGLOP	10	3/31/2016	0.5234
BPTDGFI	7	6/30/2016	1.2379	HWAGLOP	10	6/30/2016	0.5429
BPTDGFI	7	9/30/2016	1.2138	HWAGLOP	10	9/30/2016	0.5892
BPTDGFI	7	12/31/2016	1.1918	HWAGLOP	10	12/31/2016	0.5877
BPTDGFI	7	3/31/2017	1.2959	HWAGLOP	10	3/31/2017	0.6498
BPTDGFI	7	6/30/2017	1.3611	HWAGLOP	10	6/30/2017	0.6694
BPTDGFI	7	9/30/2017	1.3318	HWAGLOP	10	9/30/2017	0.7023
BPTDGFI	7	12/31/2017	1.4116	HWAGLOP	10	12/31/2017	0.7346
CPASPDI	8	3/31/2015	0.3032	HWASCAP	11	3/31/2015	1.3291
CPASPDI	8	6/30/2015	0.2962	HWASCAP	11	6/30/2015	1.357
CPASPDI	8	9/30/2015	0.2943	HWASCAP	11	9/30/2015	1.3493
CPASPDI	8	12/31/2015	0.2904	HWASCAP	11	12/31/2015	1.3348
CPASPDI	8	3/31/2016	0.2692	HWASCAP	11	3/31/2016	1.2936
CPASPDI	8	6/30/2016	0.2829	HWASCAP	11	6/30/2016	1.3788
CPASPDI	8	9/30/2016	0.311	HWASCAP	11	9/30/2016	1.5145
CPASPDI	8	12/31/2016	0.3102	HWASCAP	11	12/31/2016	1.4458
CPASPDI	8	3/31/2017	0.3384	HWASCAP	11	3/31/2017	1.7054
CPASPDI	8	6/30/2017	0.3589	HWASCAP	11	6/30/2017	1.7338
CPASPDI	8	9/30/2017	0.3645	HWASCAP	11	9/30/2017	1.6445
CPASPDI	8	12/31/2017	0.3847	HWASCAP	11	12/31/2017	1.552
HLGAPDV	9	3/31/2015	0.3697	KAPTRFD	12	3/31/2015	1.3269
HLGAPDV	9	6/30/2015	0.3563	KAPTRFD	12	6/30/2015	1.3855
HLGAPDV	9	9/30/2015	0.3528	KAPTRFD	12	9/30/2015	1.3701
HLGAPDV	9	12/31/2015	0.3838	KAPTRFD	12	12/31/2015	1.3504
HLGAPDV	9	3/31/2016	0.369	KAPTRFD	12	3/31/2016	1.2365
HLGAPDV	9	6/30/2016	0.3674	KAPTRFD	12	6/30/2016	1.2786
HLGAPDV	9	9/30/2016	0.3961	KAPTRFD	12	9/30/2016	1.3842
HLGAPDV	9	12/31/2016	0.3906	KAPTRFD	12	12/31/2016	1.3884
HLGAPDV	9	3/31/2017	0.4314	KAPTRFD	12	3/31/2017	1.49
HLGAPDV	9	6/30/2017	0.4489	KAPTRFD	12	6/30/2017	1.5062
HLGAPDV	9	9/30/2017	0.4619	KAPTRFD	12	9/30/2017	1.534
HLGAPDV	9	12/31/2017	0.4604	KAPTRFD	12	12/31/2017	1.5496

FUND	ID	DATE	NAV	FUND	ID	DATE	NAV
OSKASGO	13	3/31/2015	0.5856	PACGAIR	16	3/31/2015	0.4073
OSKASGO	13	6/30/2015	0.6037	PACGAIR	16	6/30/2015	0.4114
OSKASGO	13	9/30/2015	0.5917	PACGAIR	16	9/30/2015	0.3802
OSKASGO	13	12/31/2015	0.6007	PACGAIR	16	12/31/2015	0.3873
OSKASGO	13	3/31/2016	0.5494	PACGAIR	16	3/31/2016	0.3808
OSKASGO	13	6/30/2016	0.5705	PACGAIR	16	6/30/2016	0.3965
OSKASGO	13	9/30/2016	0.6357	PACGAIR	16	9/30/2016	0.4222
OSKASGO	13	12/31/2016	0.6327	PACGAIR	16	12/31/2016	0.4395
OSKASGO	13	3/31/2017	0.6803	PACGAIR	16	3/31/2017	0.4672
OSKASGO	13	6/30/2017	0.6899	PACGAIR	16	6/30/2017	0.446
OSKASGO	13	9/30/2017	0.7011	PACGAIR	16	9/30/2017	0.4492
OSKASGO	13	12/31/2017	0.7066	PACGAIR	16	12/31/2017	0.4323
OSKUOBE	14	3/31/2015	0.5583	PHASJEP	17	3/31/2015	0.9018
OSKUOBE	14	6/30/2015	0.5266	PHASJEP	17	6/30/2015	0.931
OSKUOBE	14	9/30/2015	0.4821	PHASJEP	17	9/30/2015	0.8862
OSKUOBE	14	12/31/2015	0.4365	PHASJEP	17	12/31/2015	0.9442
OSKUOBE	14	3/31/2016	0.4263	PHASJEP	17	3/31/2016	0.8917
OSKUOBE	14	6/30/2016	0.4474	PHASJEP	17	6/30/2016	0.8739
OSKUOBE	14	9/30/2016	0.3938	PHASJEP	17	9/30/2016	0.932
OSKUOBE	14	12/31/2016	0.3257	PHASJEP	17	12/31/2016	0.9389
OSKUOBE	14	3/31/2017	0.3673	PHASJEP	17	3/31/2017	1.0232
OSKUOBE	14	6/30/2017	0.3693	PHASJEP	17	6/30/2017	1.0376
OSKUOBE	14	9/30/2017	0.359	PHASJEP	17	9/30/2017	1.0699
OSKUOBE	14	12/31/2017	0.2816	PHASJEP	17	12/31/2017	1.1102
PACF018	15	3/31/2015	0.418	PRUAPEF	18	3/31/2015	0.6319
PACF018	15	6/30/2015	0.4297	PRUAPEF	18	6/30/2015	0.6304
PACF018	15	9/30/2015	0.4154	PRUAPEF	18	9/30/2015	0.5971
PACF018	15	12/31/2015	0.4157	PRUAPEF	18	12/31/2015	0.5927
PACF018	15	3/31/2016	0.4039	PRUAPEF	18	3/31/2016	0.5468
PACF018	15	6/30/2016	0.3905	PRUAPEF	18	6/30/2016	0.5488
PACF018	15	9/30/2016	0.4082	PRUAPEF	18	9/30/2016	0.63
PACF018	15	12/31/2016	0.3911	PRUAPEF	18	12/31/2016	0.6531
PACF018	15	3/31/2017	0.4332	PRUAPEF	18	3/31/2017	0.7433
PACF018	15	6/30/2017	0.4062	PRUAPEF	18	6/30/2017	0.7435
PACF018	15	9/30/2017	0.39	PRUAPEF	18	9/30/2017	0.7675
PACF018	15	12/31/2017	0.403	PRUAPEF	18	12/31/2017	0.7869

FUND	ID	DATE	NAV	FUND	ID	DATE	NAV
SAFFSAM	19	3/31/2015	2.3305	TAABNUT	22	3/31/2015	0.3452
SAFFSAM	19	6/30/2015	2.6172	TAABNUT	22	6/30/2015	0.3474
SAFFSAM	19	9/30/2015	2.3895	TAABNUT	22	9/30/2015	0.3317
SAFFSAM	19	12/31/2015	2.5031	TAABNUT	22	12/31/2015	0.335
SAFFSAM	19	3/31/2016	2.1938	TAABNUT	22	3/31/2016	0.3036
SAFFSAM	19	6/30/2016	2.2548	TAABNUT	22	6/30/2016	0.3106
SAFFSAM	19	9/30/2016	2.5325	TAABNUT	22	9/30/2016	0.3293
SAFFSAM	19	12/31/2016	2.5127	TAABNUT	22	12/31/2016	0.3304
SAFFSAM	19	3/31/2017	2.6727	TAABNUT	22	3/31/2017	0.3532
SAFFSAM	19	6/30/2017	2.7159	TAABNUT	22	6/30/2017	0.3561
SAFFSAM	19	9/30/2017	2.8565	TAABNUT	22	9/30/2017	0.3557
SAFFSAM	19	12/31/2017	3.0512	TAABNUT	22	12/31/2017	0.3547
SBBAEQF	20	3/31/2015	0.6569				
SBBAEQF	20	6/30/2015	0.6721				
SBBAEQF	20	9/30/2015	0.6535				
SBBAEQF	20	12/31/2015	0.6445				
SBBAEQF	20	3/31/2016	0.5913				
SBBAEQF	20	6/30/2016	0.6175				
SBBAEQF	20	9/30/2016	0.6875				
SBBAEQF	20	12/31/2016	0.6771				
SBBAEQF	20	3/31/2017	0.7319				
SBBAEQF	20	6/30/2017	0.7855				
SBBAEQF	20	9/30/2017	0.843				
SBBAEQF	20	12/31/2017	0.8832				
SBBEQIF	21	3/31/2015	1.3488				
SBBEQIF	21	6/30/2015	1.3315				
SBBEQIF	21	9/30/2015	1.2377				
SBBEQIF	21	12/31/2015	1.251				
SBBEQIF	21	3/31/2016	1.1951				
SBBEQIF	21	6/30/2016	1.2135				
SBBEQIF	21	9/30/2016	1.2069				
SBBEQIF	21	12/31/2016	1.1807				
SBBEQIF	21	3/31/2017	1.2929				
SBBEQIF	21	6/30/2017	1.375				
SBBEQIF	21	9/30/2017	1.3552				
SBBEQIF	21	12/31/2017	1.4205				

Appendix 2.8: Data of SDEV

FUND	ID	DATE	SDEV	FUND	ID	DATE	SDEV
ABMLCUI	1	3/31/2015	10.951993	AMAPLDV	4	3/31/2015	10.836187
ABMLCUI	1	6/30/2015	11.122997	AMAPLDV	4	6/30/2015	10.118949
ABMLCUI	1	9/30/2015	13.467198	AMAPLDV	4	9/30/2015	11.447349
ABMLCUI	1	12/31/2015	13.341606	AMAPLDV	4	12/31/2015	10.293359
ABMLCUI	1	3/31/2016	14.565384	AMAPLDV	4	3/31/2016	10.547596
ABMLCUI	1	6/30/2016	14.412054	AMAPLDV	4	6/30/2016	11.43371
ABMLCUI	1	9/30/2016	12.643427	AMAPLDV	4	9/30/2016	10.083443
ABMLCUI	1	12/31/2016	12.901827	AMAPLDV	4	12/31/2016	9.897248
ABMLCUI	1	3/31/2017	9.580132	AMAPLDV	4	3/31/2017	8.636323
ABMLCUI	1	6/30/2017	9.655864	AMAPLDV	4	6/30/2017	9.143081
ABMLCUI	1	9/30/2017	11.698684	AMAPLDV	4	9/30/2017	9.90294
ABMLCUI	1	12/31/2017	12.170841	AMAPLDV	4	12/31/2017	10.24373
AMMAPJD	2	3/31/2015	10.477656	APASXJP	5	3/31/2015	-
AMMAPJD	2	6/30/2015	10.460648	APASXJP	5	6/30/2015	-
AMMAPJD	2	9/30/2015	11.39439	APASXJP	5	9/30/2015	-
AMMAPJD	2	12/31/2015	11.56331	APASXJP	5	12/31/2015	-
AMMAPJD	2	3/31/2016	13.032886	APASXJP	5	3/31/2016	10.18903
AMMAPJD	2	6/30/2016	14.15445	APASXJP	5	6/30/2016	11.749107
AMMAPJD	2	9/30/2016	13.487314	APASXJP	5	9/30/2016	12.556613
AMMAPJD	2	12/31/2016	13.715024	APASXJP	5	12/31/2016	13.061332
AMMAPJD	2	3/31/2017	10.805791	APASXJP	5	3/31/2017	10.472983
AMMAPJD	2	6/30/2017	9.486724	APASXJP	5	6/30/2017	9.446644
AMMAPJD	2	9/30/2017	9.794951	APASXJP	5	9/30/2017	10.307456
AMMAPJD	2	12/31/2017	9.057442	APASXJP	5	12/31/2017	9.342627
AMAPEQI	3	3/31/2015	10.960035	AVECLAS	6	3/31/2015	8.112455
AMAPEQI	3	6/30/2015	11.66164	AVECLAS	6	6/30/2015	9.693074
AMAPEQI	3	9/30/2015	14.069849	AVECLAS	6	9/30/2015	11.307677
AMAPEQI	3	12/31/2015	15.402376	AVECLAS	6	12/31/2015	11.1362
AMAPEQI	3	3/31/2016	18.387434	AVECLAS	6	3/31/2016	13.869046
AMAPEQI	3	6/30/2016	18.668028	AVECLAS	6	6/30/2016	13.47302
AMAPEQI	3	9/30/2016	17.119384	AVECLAS	6	9/30/2016	12.270708
AMAPEQI	3	12/31/2016	16.196797	AVECLAS	6	12/31/2016	12.225103
AMAPEQI	3	3/31/2017	11.694264	AVECLAS	6	3/31/2017	9.182064
AMAPEQI	3	6/30/2017	10.023917	AVECLAS	6	6/30/2017	8.137844
AMAPEQI	3	9/30/2017	10.762159	AVECLAS	6	9/30/2017	9.100423
AMAPEQI	3	12/31/2017	10.668702	AVECLAS	6	12/31/2017	9.132332

FUND	ID	DATE	SDEV	FUND	ID	DATE	SDEV
BPTDGFI	7	3/31/2015	6.738786	HWAGLOP	10	3/31/2015	8.808591
BPTDGFI	7	6/30/2015	7.320255	HWAGLOP	10	6/30/2015	9.704297
BPTDGFI	7	9/30/2015	8.77968	HWAGLOP	10	9/30/2015	10.823603
BPTDGFI	7	12/31/2015	8.193609	HWAGLOP	10	12/31/2015	10.07882
BPTDGFI	7	3/31/2016	8.501097	HWAGLOP	10	3/31/2016	10.977124
BPTDGFI	7	6/30/2016	8.230445	HWAGLOP	10	6/30/2016	10.360904
BPTDGFI	7	9/30/2016	7.095778	HWAGLOP	10	9/30/2016	9.776749
BPTDGFI	7	12/31/2016	7.021758	HWAGLOP	10	12/31/2016	9.81297
BPTDGFI	7	3/31/2017	6.231767	HWAGLOP	10	3/31/2017	8.004013
BPTDGFI	7	6/30/2017	5.97331	HWAGLOP	10	6/30/2017	7.870112
BPTDGFI	7	9/30/2017	5.724931	HWAGLOP	10	9/30/2017	8.418162
BPTDGFI	7	12/31/2017	5.591387	HWAGLOP	10	12/31/2017	8.939374
CPASPDI	8	3/31/2015	7.581123	HWASCAP	11	3/31/2015	8.024012
CPASPDI	8	6/30/2015	8.668497	HWASCAP	11	6/30/2015	8.44845
CPASPDI	8	9/30/2015	10.188731	HWASCAP	11	9/30/2015	9.699457
CPASPDI	8	12/31/2015	10.977355	HWASCAP	11	12/31/2015	8.650011
CPASPDI	8	3/31/2016	12.287294	HWASCAP	11	3/31/2016	10.279086
CPASPDI	8	6/30/2016	12.669809	HWASCAP	11	6/30/2016	9.744923
CPASPDI	8	9/30/2016	12.374726	HWASCAP	11	9/30/2016	8.831853
CPASPDI	8	12/31/2016	11.915826	HWASCAP	11	12/31/2016	8.92443
CPASPDI	8	3/31/2017	9.428753	HWASCAP	11	3/31/2017	7.540562
CPASPDI	8	6/30/2017	8.73613	HWASCAP	11	6/30/2017	7.504727
CPASPDI	8	9/30/2017	8.755516	HWASCAP	11	9/30/2017	7.870932
CPASPDI	8	12/31/2017	9.099852	HWASCAP	11	12/31/2017	9.12702
HLGAPDV	9	3/31/2015	7.504964	KAPTRFD	12	3/31/2015	10.688131
HLGAPDV	9	6/30/2015	7.411339	KAPTRFD	12	6/30/2015	11.488301
HLGAPDV	9	9/30/2015	11.161381	KAPTRFD	12	9/30/2015	13.053819
HLGAPDV	9	12/31/2015	11.770008	KAPTRFD	12	12/31/2015	13.35085
HLGAPDV	9	3/31/2016	12.379225	KAPTRFD	12	3/31/2016	13.688014
HLGAPDV	9	6/30/2016	12.541514	KAPTRFD	12	6/30/2016	12.630287
HLGAPDV	9	9/30/2016	9.991718	KAPTRFD	12	9/30/2016	11.497495
HLGAPDV	9	12/31/2016	9.067516	KAPTRFD	12	12/31/2016	10.403258
HLGAPDV	9	3/31/2017	8.16881	KAPTRFD	12	3/31/2017	7.685349
HLGAPDV	9	6/30/2017	8.211374	KAPTRFD	12	6/30/2017	7.294574
HLGAPDV	9	9/30/2017	10.437743	KAPTRFD	12	9/30/2017	7.378739
HLGAPDV	9	12/31/2017	10.942657	KAPTRFD	12	12/31/2017	7.877658

FUND	ID	DATE	SDEV	FUND	ID	DATE	SDEV
OSKASGO	13	3/31/2015	11.325428	PACGAIR	16	3/31/2015	9.751179
OSKASGO	13	6/30/2015	11.756304	PACGAIR	16	6/30/2015	9.93784
OSKASGO	13	9/30/2015	14.005852	PACGAIR	16	9/30/2015	11.236555
OSKASGO	13	12/31/2015	14.561465	PACGAIR	16	12/31/2015	12.218421
OSKASGO	13	3/31/2016	15.993832	PACGAIR	16	3/31/2016	13.770455
OSKASGO	13	6/30/2016	15.364249	PACGAIR	16	6/30/2016	14.523113
OSKASGO	13	9/30/2016	13.928527	PACGAIR	16	9/30/2016	13.741384
OSKASGO	13	12/31/2016	13.66902	PACGAIR	16	12/31/2016	12.447636
OSKASGO	13	3/31/2017	10.442861	PACGAIR	16	3/31/2017	8.777294
OSKASGO	13	6/30/2017	9.552487	PACGAIR	16	6/30/2017	7.336207
OSKASGO	13	9/30/2017	9.322629	PACGAIR	16	9/30/2017	6.383096
OSKASGO	13	12/31/2017	8.834323	PACGAIR	16	12/31/2017	6.322025
OSKUOBE	14	3/31/2015	8.800348	PHASJEP	17	3/31/2015	9.070348
OSKUOBE	14	6/30/2015	9.495318	PHASJEP	17	6/30/2015	10.350361
OSKUOBE	14	9/30/2015	12.622947	PHASJEP	17	9/30/2015	11.07187
OSKUOBE	14	12/31/2015	13.415583	PHASJEP	17	12/31/2015	11.266222
OSKUOBE	14	3/31/2016	13.607395	PHASJEP	17	3/31/2016	13.496603
OSKUOBE	14	6/30/2016	13.137483	PHASJEP	17	6/30/2016	12.914049
OSKUOBE	14	9/30/2016	14.565158	PHASJEP	17	9/30/2016	12.779774
OSKUOBE	14	12/31/2016	13.322527	PHASJEP	17	12/31/2016	11.911524
OSKUOBE	14	3/31/2017	13.338105	PHASJEP	17	3/31/2017	8.721012
OSKUOBE	14	6/30/2017	13.420795	PHASJEP	17	6/30/2017	8.239239
OSKUOBE	14	9/30/2017	8.758923	PHASJEP	17	9/30/2017	7.95833
OSKUOBE	14	12/31/2017	8.730898	PHASJEP	17	12/31/2017	9.344473
PACF018	15	3/31/2015	8.967702	PRUAPEF	18	3/31/2015	11.226429
PACF018	15	6/30/2015	9.670274	PRUAPEF	18	6/30/2015	11.699915
PACF018	15	9/30/2015	11.18745	PRUAPEF	18	9/30/2015	12.9603
PACF018	15	12/31/2015	10.3748	PRUAPEF	18	12/31/2015	12.945716
PACF018	15	3/31/2016	12.068877	PRUAPEF	18	3/31/2016	16.288367
PACF018	15	6/30/2016	11.59916	PRUAPEF	18	6/30/2016	17.558498
PACF018	15	9/30/2016	10.294888	PRUAPEF	18	9/30/2016	17.45751
PACF018	15	12/31/2016	9.701753	PRUAPEF	18	12/31/2016	17.141904
PACF018	15	3/31/2017	8.424639	PRUAPEF	18	3/31/2017	12.312625
PACF018	15	6/30/2017	8.670084	PRUAPEF	18	6/30/2017	10.071857
PACF018	15	9/30/2017	8.649012	PRUAPEF	18	9/30/2017	10.087494
PACF018	15	12/31/2017	8.330712	PRUAPEF	18	12/31/2017	9.729574

FUND	ID	DATE	SDEV	FUND	ID	DATE	SDEV
SAFFSAM	19	3/31/2015	10.774411	TAABNUT	22	3/31/2015	8.755577
SAFFSAM	19	6/30/2015	13.179042	TAABNUT	22	6/30/2015	8.911024
SAFFSAM	19	9/30/2015	15.442364	TAABNUT	22	9/30/2015	10.378056
SAFFSAM	19	12/31/2015	16.07021	TAABNUT	22	12/31/2015	10.593589
SAFFSAM	19	3/31/2016	17.975113	TAABNUT	22	3/31/2016	12.670157
SAFFSAM	19	6/30/2016	15.846047	TAABNUT	22	6/30/2016	13.228054
SAFFSAM	19	9/30/2016	14.956683	TAABNUT	22	9/30/2016	12.440809
SAFFSAM	19	12/31/2016	14.957241	TAABNUT	22	12/31/2016	12.085754
SAFFSAM	19	3/31/2017	11.158665	TAABNUT	22	3/31/2017	8.370014
SAFFSAM	19	6/30/2017	10.117306	TAABNUT	22	6/30/2017	7.284802
SAFFSAM	19	9/30/2017	9.944623	TAABNUT	22	9/30/2017	6.755677
SAFFSAM	19	12/31/2017	9.898435	TAABNUT	22	12/31/2017	6.384394
SBBAEQF	20	3/31/2015	9.741001				
SBBAEQF	20	6/30/2015	10.760275				
SBBAEQF	20	9/30/2015	12.691641				
SBBAEQF	20	12/31/2015	13.648628				
SBBAEQF	20	3/31/2016	14.603558				
SBBAEQF	20	6/30/2016	14.445403				
SBBAEQF	20	9/30/2016	13.953891				
SBBAEQF	20	12/31/2016	13.158877				
SBBAEQF	20	3/31/2017	10.706294				
SBBAEQF	20	6/30/2017	9.957238				
SBBAEQF	20	9/30/2017	10.133685				
SBBAEQF	20	12/31/2017	9.977142				
SBBEQIF	21	3/31/2015	7.046608				
SBBEQIF	21	6/30/2015	7.83389				
SBBEQIF	21	9/30/2015	9.051426				
SBBEQIF	21	12/31/2015	9.089285				
SBBEQIF	21	3/31/2016	9.762442				
SBBEQIF	21	6/30/2016	9.498472				
SBBEQIF	21	9/30/2016	9.112884				
SBBEQIF	21	12/31/2016	9.055891				
SBBEQIF	21	3/31/2017	7.682618				
SBBEQIF	21	6/30/2017	7.355331				
SBBEQIF	21	9/30/2017	7.173591				
SBBEQIF	21	12/31/2017	6.856929				

Appendix 2.9: Data of TNO

FUND	ID	DATE	TNO	FUND	ID	DATE	TNO
ABMLCUI	1	3/31/2015	3.02	AMAPLDV	4	3/31/2015	1.13
ABMLCUI	1	6/30/2015	3.02	AMAPLDV	4	6/30/2015	1.13
ABMLCUI	1	9/30/2015	3.02	AMAPLDV	4	9/30/2015	1.13
ABMLCUI	1	12/31/2015	3.02	AMAPLDV	4	12/31/2015	1.13
ABMLCUI	1	3/31/2016	3.02	AMAPLDV	4	3/31/2016	1.13
ABMLCUI	1	6/30/2016	3.02	AMAPLDV	4	6/30/2016	1.13
ABMLCUI	1	9/30/2016	3.02	AMAPLDV	4	9/30/2016	1.13
ABMLCUI	1	12/31/2016	3.02	AMAPLDV	4	12/31/2016	1.13
ABMLCUI	1	3/31/2017	3.02	AMAPLDV	4	3/31/2017	1.13
ABMLCUI	1	6/30/2017	3.02	AMAPLDV	4	6/30/2017	1.13
ABMLCUI	1	9/30/2017	3.02	AMAPLDV	4	9/30/2017	1.13
ABMLCUI	1	12/31/2017	3.02	AMAPLDV	4	12/31/2017	1.13
AMMAPJD	2	3/31/2015	0.58	APASXJP	5	3/31/2015	-
AMMAPJD	2	6/30/2015	0.58	APASXJP	5	6/30/2015	-
AMMAPJD	2	9/30/2015	0.58	APASXJP	5	9/30/2015	-
AMMAPJD	2	12/31/2015	0.58	APASXJP	5	12/31/2015	-
AMMAPJD	2	3/31/2016	0.58	APASXJP	5	3/31/2016	0.62
AMMAPJD	2	6/30/2016	0.58	APASXJP	5	6/30/2016	0.62
AMMAPJD	2	9/30/2016	0.58	APASXJP	5	9/30/2016	0.62
AMMAPJD	2	12/31/2016	0.58	APASXJP	5	12/31/2016	0.62
AMMAPJD	2	3/31/2017	0.58	APASXJP	5	3/31/2017	0.62
AMMAPJD	2	6/30/2017	0.58	APASXJP	5	6/30/2017	0.62
AMMAPJD	2	9/30/2017	0.58	APASXJP	5	9/30/2017	0.62
AMMAPJD	2	12/31/2017	0.58	APASXJP	5	12/31/2017	0.62
AMAPEQI	3	3/31/2015	0.67	AVECLAS	6	3/31/2015	1.38
AMAPEQI	3	6/30/2015	0.67	AVECLAS	6	6/30/2015	1.38
AMAPEQI	3	9/30/2015	0.67	AVECLAS	6	9/30/2015	1.38
AMAPEQI	3	12/31/2015	0.67	AVECLAS	6	12/31/2015	1.38
AMAPEQI	3	3/31/2016	0.67	AVECLAS	6	3/31/2016	1.38
AMAPEQI	3	6/30/2016	0.67	AVECLAS	6	6/30/2016	1.38
AMAPEQI	3	9/30/2016	0.67	AVECLAS	6	9/30/2016	1.38
AMAPEQI	3	12/31/2016	0.67	AVECLAS	6	12/31/2016	1.38
AMAPEQI	3	3/31/2017	0.67	AVECLAS	6	3/31/2017	1.38
AMAPEQI	3	6/30/2017	0.67	AVECLAS	6	6/30/2017	1.38
AMAPEQI	3	9/30/2017	0.67	AVECLAS	6	9/30/2017	1.38
AMAPEQI	3	12/31/2017	0.67	AVECLAS	6	12/31/2017	1.38

FUND	ID	DATE	TNO	FUND	ID	DATE	TNO
BPTDGFI	7	3/31/2015	1.1	HWAGLOP	10	3/31/2015	1.96
BPTDGFI	7	6/30/2015	1.1	HWAGLOP	10	6/30/2015	1.96
BPTDGFI	7	9/30/2015	1.1	HWAGLOP	10	9/30/2015	1.96
BPTDGFI	7	12/31/2015	1.1	HWAGLOP	10	12/31/2015	1.96
BPTDGFI	7	3/31/2016	1.1	HWAGLOP	10	3/31/2016	1.96
BPTDGFI	7	6/30/2016	1.1	HWAGLOP	10	6/30/2016	1.96
BPTDGFI	7	9/30/2016	1.1	HWAGLOP	10	9/30/2016	1.96
BPTDGFI	7	12/31/2016	1.1	HWAGLOP	10	12/31/2016	1.96
BPTDGFI	7	3/31/2017	1.1	HWAGLOP	10	3/31/2017	1.96
BPTDGFI	7	6/30/2017	1.1	HWAGLOP	10	6/30/2017	1.96
BPTDGFI	7	9/30/2017	1.1	HWAGLOP	10	9/30/2017	1.96
BPTDGFI	7	12/31/2017	1.1	HWAGLOP	10	12/31/2017	1.96
CPASPDI	8	3/31/2015	1.99	HWASCAP	11	3/31/2015	1.94
CPASPDI	8	6/30/2015	1.99	HWASCAP	11	6/30/2015	1.94
CPASPDI	8	9/30/2015	1.99	HWASCAP	11	9/30/2015	1.94
CPASPDI	8	12/31/2015	1.99	HWASCAP	11	12/31/2015	1.94
CPASPDI	8	3/31/2016	1.99	HWASCAP	11	3/31/2016	1.94
CPASPDI	8	6/30/2016	1.99	HWASCAP	11	6/30/2016	1.94
CPASPDI	8	9/30/2016	1.99	HWASCAP	11	9/30/2016	1.94
CPASPDI	8	12/31/2016	1.99	HWASCAP	11	12/31/2016	1.94
CPASPDI	8	3/31/2017	1.99	HWASCAP	11	3/31/2017	1.94
CPASPDI	8	6/30/2017	1.99	HWASCAP	11	6/30/2017	1.94
CPASPDI	8	9/30/2017	1.99	HWASCAP	11	9/30/2017	1.94
CPASPDI	8	12/31/2017	1.99	HWASCAP	11	12/31/2017	1.94
HLGAPDV	9	3/31/2015	2.38	KAPTRFD	12	3/31/2015	1.83
HLGAPDV	9	6/30/2015	2.38	KAPTRFD	12	6/30/2015	1.83
HLGAPDV	9	9/30/2015	2.38	KAPTRFD	12	9/30/2015	1.83
HLGAPDV	9	12/31/2015	2.38	KAPTRFD	12	12/31/2015	1.83
HLGAPDV	9	3/31/2016	2.38	KAPTRFD	12	3/31/2016	1.83
HLGAPDV	9	6/30/2016	2.38	KAPTRFD	12	6/30/2016	1.83
HLGAPDV	9	9/30/2016	2.38	KAPTRFD	12	9/30/2016	1.83
HLGAPDV	9	12/31/2016	2.38	KAPTRFD	12	12/31/2016	1.83
HLGAPDV	9	3/31/2017	2.38	KAPTRFD	12	3/31/2017	1.83
HLGAPDV	9	6/30/2017	2.38	KAPTRFD	12	6/30/2017	1.83
HLGAPDV	9	9/30/2017	2.38	KAPTRFD	12	9/30/2017	1.83
HLGAPDV	9	12/31/2017	2.38	KAPTRFD	12	12/31/2017	1.83

FUND	ID	DATE	TNO	FUND	ID	DATE	TNO
OSKASGO	13	3/31/2015	0.22	PACGAIR	16	3/31/2015	1.21
OSKASGO	13	6/30/2015	0.22	PACGAIR	16	6/30/2015	1.21
OSKASGO	13	9/30/2015	0.22	PACGAIR	16	9/30/2015	1.21
OSKASGO	13	12/31/2015	0.22	PACGAIR	16	12/31/2015	1.21
OSKASGO	13	3/31/2016	0.22	PACGAIR	16	3/31/2016	1.21
OSKASGO	13	6/30/2016	0.22	PACGAIR	16	6/30/2016	1.21
OSKASGO	13	9/30/2016	0.22	PACGAIR	16	9/30/2016	1.21
OSKASGO	13	12/31/2016	0.22	PACGAIR	16	12/31/2016	1.21
OSKASGO	13	3/31/2017	0.22	PACGAIR	16	3/31/2017	1.21
OSKASGO	13	6/30/2017	0.22	PACGAIR	16	6/30/2017	1.21
OSKASGO	13	9/30/2017	0.22	PACGAIR	16	9/30/2017	1.21
OSKASGO	13	12/31/2017	0.22	PACGAIR	16	12/31/2017	1.21
OSKUOBE	14	3/31/2015	2.06	PHASJEP	17	3/31/2015	0.96
OSKUOBE	14	6/30/2015	2.06	PHASJEP	17	6/30/2015	0.96
OSKUOBE	14	9/30/2015	2.06	PHASJEP	17	9/30/2015	0.96
OSKUOBE	14	12/31/2015	2.06	PHASJEP	17	12/31/2015	0.96
OSKUOBE	14	3/31/2016	2.06	PHASJEP	17	3/31/2016	0.96
OSKUOBE	14	6/30/2016	2.06	PHASJEP	17	6/30/2016	0.96
OSKUOBE	14	9/30/2016	2.06	PHASJEP	17	9/30/2016	0.96
OSKUOBE	14	12/31/2016	2.06	PHASJEP	17	12/31/2016	0.96
OSKUOBE	14	3/31/2017	2.06	PHASJEP	17	3/31/2017	0.96
OSKUOBE	14	6/30/2017	2.06	PHASJEP	17	6/30/2017	0.96
OSKUOBE	14	9/30/2017	2.06	PHASJEP	17	9/30/2017	0.96
OSKUOBE	14	12/31/2017	2.06	PHASJEP	17	12/31/2017	0.96
PACF018	15	3/31/2015	1.51	PRUAPEF	18	3/31/2015	0.62
PACF018	15	6/30/2015	1.51	PRUAPEF	18	6/30/2015	0.62
PACF018	15	9/30/2015	1.51	PRUAPEF	18	9/30/2015	0.62
PACF018	15	12/31/2015	1.51	PRUAPEF	18	12/31/2015	0.62
PACF018	15	3/31/2016	1.51	PRUAPEF	18	3/31/2016	0.62
PACF018	15	6/30/2016	1.51	PRUAPEF	18	6/30/2016	0.62
PACF018	15	9/30/2016	1.51	PRUAPEF	18	9/30/2016	0.62
PACF018	15	12/31/2016	1.51	PRUAPEF	18	12/31/2016	0.62
PACF018	15	3/31/2017	1.51	PRUAPEF	18	3/31/2017	0.62
PACF018	15	6/30/2017	1.51	PRUAPEF	18	6/30/2017	0.62
PACF018	15	9/30/2017	1.51	PRUAPEF	18	9/30/2017	0.62
PACF018	15	12/31/2017	1.51	PRUAPEF	18	12/31/2017	0.62

FUND	ID	DATE	TNO	FUND	ID	DATE	TNO
SAFFSAM	19	3/31/2015	0.5	TAABNUT	22	3/31/2015	0.41
SAFFSAM	19	6/30/2015	0.5	TAABNUT	22	6/30/2015	0.41
SAFFSAM	19	9/30/2015	0.5	TAABNUT	22	9/30/2015	0.41
SAFFSAM	19	12/31/2015	0.5	TAABNUT	22	12/31/2015	0.41
SAFFSAM	19	3/31/2016	0.5	TAABNUT	22	3/31/2016	0.41
SAFFSAM	19	6/30/2016	0.5	TAABNUT	22	6/30/2016	0.41
SAFFSAM	19	9/30/2016	0.5	TAABNUT	22	9/30/2016	0.41
SAFFSAM	19	12/31/2016	0.5	TAABNUT	22	12/31/2016	0.41
SAFFSAM	19	3/31/2017	0.5	TAABNUT	22	3/31/2017	0.41
SAFFSAM	19	6/30/2017	0.5	TAABNUT	22	6/30/2017	0.41
SAFFSAM	19	9/30/2017	0.5	TAABNUT	22	9/30/2017	0.41
SAFFSAM	19	12/31/2017	0.5	TAABNUT	22	12/31/2017	0.41
SBBAEQF	20	3/31/2015	1				
SBBAEQF	20	6/30/2015	1				
SBBAEQF	20	9/30/2015	1				
SBBAEQF	20	12/31/2015	1				
SBBAEQF	20	3/31/2016	1				
SBBAEQF	20	6/30/2016	1				
SBBAEQF	20	9/30/2016	1				
SBBAEQF	20	12/31/2016	1				
SBBAEQF	20	3/31/2017	1				
SBBAEQF	20	6/30/2017	1				
SBBAEQF	20	9/30/2017	1				
SBBAEQF	20	12/31/2017	1				
SBBEQIF	21	3/31/2015	0.99				
SBBEQIF	21	6/30/2015	0.99				
SBBEQIF	21	9/30/2015	0.99				
SBBEQIF	21	12/31/2015	0.99				
SBBEQIF	21	3/31/2016	0.99				
SBBEQIF	21	6/30/2016	0.99				
SBBEQIF	21	9/30/2016	0.99				
SBBEQIF	21	12/31/2016	0.99				
SBBEQIF	21	3/31/2017	0.99				
SBBEQIF	21	6/30/2017	0.99				
SBBEQIF	21	9/30/2017	0.99				
SBBEQIF	21	12/31/2017	0.99				