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Effect of Tax Reform for Onshore Funds on Tax Burden of Investor: Evidence from Korean Market

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ABSTRACT

From June 1, 2007 until the end of 2009, onshore funds in Korea benefitted from the temporary non-taxation policy for the gain on the disposal and revaluation of the stocks listed on foreign stock market, a similar scenario as that of the domestic investment funds. This tax reform, aimed at securing a counter measure against the rise of the exchange rate, induced investment by offering tax benefits to those investing funds abroad. This study investigates whether the temporary non-taxation policy on the onshore funds has any effect on the investor's tax burden in an emerging market, such as Korea. This study reveals the statistically higher positive significance of the tax benefit during the application of non-taxation compared with the period when taxation was applied in the entire sample. The application of non-taxation included the temporary enforcement and the expiration of non-taxation. The finding indicates that temporary non-taxation policy on the onshore funds enabled investors to enjoy the tax benefit. However, a statistically significant negative relationship between the fluctuating rate of exchange and the period of tax benefit was observed. This relationship shows that with any gain on foreign currency, the tax basis increases to reduce the difference between that and the fund basis. Consequently, this kind of tax reform limits the measure by ignoring the risk of exchange fluctuations in the international investment.

Key words: Onshore fund, tax burden, tax reform for onshore fund

INTRODUCTION

Since, the beginning of the year 2000, the cash flowing into the market fund of Korea has been rapidly increasing along with the economic growth of the country. The awareness on the relationship between the lowered interest rate of banks and high-risk and high-yield of investors has transformed funds into an attractive alternative investment to bonds and bank savings. When the quantitative aspect of funds was reviewed, the 9 billion US dollars of net asset value of the equity fund in 2001 increased sharply to 27 billion US dollars in 2005 and approximately 108 billion US dollars in 2007 (Yoo and Hwang, 2010). The enforcement of Financial Services Reform Act resulted in the development of various types of funds and the diversification of channels for fund selling to accelerate the cash inflow.

Moreover, the onshore fund cash flow became more activated owing to the enforcement of the Temporary Non-taxation of Foreign Investment Mutual Fund in June 2007 (Moon and Lee, 2011). Previously, the gain on disposal and revaluation of stock listed in the foreign stock market was

taxed as financial income discriminately from domestically invested funds (hereinafter referred to as domestic funds). However, the profit margin from the disposal and revaluation of stocks was taxed in the same manner as that of domestic funds. Tax benefit led to the inflow of huge investments on the onshore funds. However, a considerable number of cases showing negative viewpoint regarding the effect of temporary non-taxation action on the onshore funds was produced. Although this temporary non-taxation was beneficial to the investors, the bigger profit obtained because of the increase in exchange rate actually failed to bring about the expected significant tax benefit (Yoo and Hwang, 2010).

The effects of temporary non-taxation on the onshore funds have not been reported in research. Most of the previous studies have emphasized the problems of the system using the tax law approach and suggested enforcement methods. Therefore, the current study estimates and analyzes the effect of temporary non-taxation policy on the onshore funds which was enforced temporarily from June 1, 2007 to December 31, 2009. Hence, the fund basis less the tax basis was divided by the former, in which the tax benefit variable was defined as a dependent variable. The division was conducted to verify whether the size of the tax benefit variable changed at a statistically significant level before and after the enforcement and expiration dates. In addition, the influence of the exchange fluctuations on the relationship between tax benefit and temporary non-taxation policy on the onshore funds was estimated. The results are as follows: First, the tax benefit during the enforcement of the temporary non-taxation on the onshore funds is anticipated to be larger compared with the benefit when non-taxation was not employed. Considering that the enforcement of temporary non-taxation facilitated the disposal and revaluation of stock listed on foreign stock market exempt from taxation, the tax burden of fund investors will be reduced relatively; thus, a lower tax basis will be attained. Accordingly, the scope of tax-benefit variable will be larger than that before the enforcement and by contrast, the scope will be smaller after the sunset date of the policy than the scope before the sunset date.

Second, exchange rate is expected to exert a negative (-) effect on tax benefit variable and its change. In spite of the application of non-taxation to onshore funds, gain and loss on foreign currency transactions by exchange fluctuations are supposed to be regarded as financial income which is subject to taxation. Consequently, the profit on exchange from an increase in the exchange rate is included in the tax basis of funds to reduce the size of tax benefit variable. Therefore, the tax benefit will be larger because of the temporary enforcement of non-taxation policy; yet, it will be reduced relatively when the exchange rate is increased.

The present study provides political implications. One of these implications refers to the idea that the government should not achieve its political purpose by suggesting tax benefit to unsophisticated investors because tax benefit may lead to unreasonable results. These results which could be due to the change in the environment of international economics and macroeconomics, do not conform to the purpose of the policy. Furthermore, this study significantly attempts to examine tax accounting for taxation on funds by using an empirical approach to formulate the temporary non-taxation policy on the onshore funds.

The pretax income of Onshore Fund (R_p) before the temporary enforcement of non-taxation policy on the onshore funds from June 1, 2007 to December 31, 2009 can be defined as the profit composed of the interest income from bonds and securities (I_b), dividend income of stock (d_s), gain on disposal of stock (g_d), gain on revaluation of stock (g_r) and gain on foreign currency transactions (c) as shown by Eq. 1:

$$R_p = (I_b + d_s + g_s + g_e + c) \quad (1)$$

With the reflection of the tax rate (t) applied to the financial income of the collective investment trust, the after-tax income of onshore fund (R_a) can be derived by Eq. 2:

$$R_a = (I_b + d_s + g_s + g_e + c) (1-t) \quad (2)$$

However, although the after-tax income R_a^{2007} enjoyed the non-taxation for gain on the disposal of stock and gain on revaluation of stock at the onset of the enforcement of non-taxation policy on onshore funds on June 1, 2007, it was also taxed for interest income (I_b), dividend income (d_s) and gain on foreign currency transactions which can be calculated by Eq. 3:

$$R_a^{2007} = (I_b + d_s + c) (1-t) + g_s + g_e \quad (3)$$

Eventually with the enforcement of non-taxation policy on onshore funds, the tax benefit enjoyed by fund investors is calculated as $R_a - R_a^{2007}$ (Eq. 3). The benefit attains a value of zero in the occurrence of any loss on stock transactions or any loss on stock evaluation, not of gain on stock transactions (g_s) and gain on stock evaluation (g_e).

On the contrary, when the policy expired on December 31, 2009, the gain on stock transactions (g_s) and the gain on stock evaluation (g_e) which had been exempted from taxation, were taxed to increase the tax burden relatively by $(g_s + g_e) \times t$.

However, despite the negative (-) values of the gain on stock transactions (g_s) and the gain on stock evaluation (g_e), these cannot be offset by interest income (I_b), dividend income of stock (d_s), or gain on foreign currency transactions (c). In particular, gain on foreign currency transactions is calculated as stock-price on acquisition date H rise of exchange rate at the time of the stock-price ascent. When the stock-price falls, the stock price on disposal date H amount of currency change can be regarded as a financial income which is subject to taxation. In short, taking the tax burden for gain on foreign currency transactions in spite of any losses on stock transactions and evaluation when the price of investment stocks falls and the exchange rate rises cannot help fund investors.

This taxation policy on onshore funds can be explained as the difference between the fund basis and taxation. Hence, the former is the value of the net assets of funds that reflects the pretax income divided by per shares and the latter is the value of the net assets of funds that reflects the after-tax income divided by per shares. Accordingly, the value of the fund basis without taxation can be defined as Tax_Benefit (Eq. 4). Since the gain on disposal and revaluation of stock listed on foreign stock market is not included in the standard for assessment under the temporary non-taxation policy on the onshore funds; Tax_Benefit, before its enforcement achieves a relatively larger value before enforcement compared with its value after enforcement:

$$\text{Tax_Benefit} = R_a^{2007} - R_a = (g_s + g_e)t \quad (4)$$

However, when any loss on disposal or revaluation occurs in the situation where the exchange rate increases, the size of Tax_Benefit varies. Even though the pretax rate of income has a negative (-) value, the after-tax rate of income ends up with a lower value because the gain on foreign currency transactions is subjected to taxation. Thus, Tax_Benefit increases after the enforcement of the policy, whereas exchange rate has a negative (-) effect on the increase range.

This study examines possible changes to the size of Tax_Benefit at the time of its enforcement and expiration date and verifies the effect of the exchange rate on Tax_Benefit to determine the effect of temporary non-taxation policy on the onshore funds.

This study focuses on analyzing the tax factors related to funds and the tax law which suggested the problems of taxation system on the onshore funds under the current Income Tax Law. The representative studies on tax factors related to fund operation were carried out by Barclay *et al.* (1998), Bergstresser and Poterba (2002) and Cici *et al.* (2013). Barclay *et al.* (1998) studied the overhang effect created by the taxation on the capital gains of funds. The results showed that the net-cash flow in the funds with lower unrealized capital gains is relatively smaller than any other funds. They argued that this overhang effect of funds, the preference of investors changed from the funds of highly unrealized capital gains with the burden of relatively lower tax to the funds with higher unrealized capital gains. The change in preference resulted in tax-deferral effect in the process of investment decision-making (Yoon and Park, 2014).

Bergstresser and Poterba (2002) analyzed the cash flow of funds to verify if fund investors are more concerned with the after-tax rate of returns (yield) than the pre-tax rate of returns in the process of investment decision-making. Results suggested that the cash flow into the funds with heavier burden is relatively lower than any other funds. The reason for the extreme concern of the investors over the after-tax yield rate is based on their view of after-tax yield rate as the way to minimize their tax burden in a complicated fund-taxation system which is unlike the system of any other financial products.

Cici *et al.* (2013) classified the fund investors into two groups, namely, direct and indirect investors. Funds were chosen through fund distributors to determine if each group reflects the information on tax from the fund consultants to their investment decision making. Results showed that indirect investors tend to prefer non-taxation funds more than the direct ones. The authors also argued that indirect investors can invest funds with higher after-tax yield rate because fund distributors offer consulting services on tax-related information to investors. Hence, fund investors consider those tax factors into consideration in the investment decision making and in the process of materializing fund yield. Moreover, the new fund investors view after-tax yield rate as more important than pre-tax yield rate at the time of investment decision making (Gruber, 1996).

Moon and Lee (2011) analyzed the cases related to onshore funds to examine the types of hedging exchange risk and funds that affect the after-tax and pre-tax price-yield ratios. Based on the results, they argued the existence of some differences at gain and loss on foreign currency transactions, depending on any fluctuations of stock-price and exchange rate as well as on after-tax price-yield ratio because of the differential taxations exacted by the current type of fund. Despite the same economic substance of foreign investment defined at the current tax law, the application of differential taxations disturbs the tax equity, depending on the type of fund and whether the funds can be considered as exchange-rate hedge.

By contrast, Choi *et al.* (2008) empirically analyzed, in a manner that is similar to that of the present study, the cash flow into onshore funds which was not taxed when non-taxation policy was temporarily enforced. They found that the fund investors increase the cash flow more than before the enforcement to lessen their tax burden.

The above mentioned previous studies can be categorized into the following: Analysis of tax factors and tax law in terms of fund investment and fund operation. However, most of the foreign studies focused on empirical analysis, whereas most domestic ones paid more attention to tax-law approach to point out the problems in taxation systems and to suggest improvement methods. By comparing the present study with these studies, the following differences are identified:

- First, in the absence of empirical studies on temporary non-taxation policy that verified its effect on the onshore funds, the present study employs an empirical approach by separating the effect of non-taxation at the time of its enforcement and expiration. Even though the effect of the policy is being reported along with several cases through the media, minimal analyses based on the substantiated materials exist (Choi and Yoon, 2014)
- Second, the effect of exchange fluctuations on fund-investors' tax burden at the time of enforcement of this temporary non-taxation policy is estimated. The enforcement was performed during the time of the 2008 international financial crisis, when the exchange rate was heavily fluctuating. The government succeeded in revitalizing the investment in domestically established onshore funds by offering the perfunctory tax benefit of non-taxation; however, fund-managers or fund-experts were of the general opinion that there was no significant tax-benefit because of the gain and loss on foreign currency transactions caused by exchange fluctuations. Accordingly, this present study figures out that such gain and loss on foreign currency transactions caused by exchange fluctuations affected the reduction of tax-benefit for onshore-fund investors

METHODOLOGY

Research design

Research model: This study was conducted from June 1, 2007 to December 31, 2009 to determine differences before and after the temporary enforcement of non-taxation policy in favor of the gain on disposal and revaluation of the onshore funds.

Equation 5 shows that the value from the deduction of tax basis (after-tax yield) from fund basis (pre-tax yield) is standardized by fund basis which is defined as the dependent variable of Tax_Benefit. The major interesting variable is defined as "1" and "0" for the period of the non-taxation applied and taxation applied, respectively. If the gain on disposal and revaluation of the onshore funds invested in the stocks listed on foreign stock market is subject to non-taxation, the difference between fund basis calculated by pre-tax yield and tax basis increases, leading to the increase of tax-benefit variables. Consequently, if the tax-benefit during the application of non-taxation policy is larger than that during the application of taxation, β_1 will show a positive symbol (+).

Using the study model to analyze the effect of temporary non-taxation policy for onshore funds, the variables of tax-benefit, the tax-factors and control variables were measured as follows:

$$\text{Tax_Benefit}_{i,t} = \alpha_0 + \beta_1 \text{TAX}_{i,t} + \beta_2 \text{TAX}_{i,t} \times \text{Exch_Rate}_{i,t} + \beta_3 \text{Exch_Rate}_{i,t} + \beta_4 \text{Exp_R}_{i,t} + \beta_5 \text{FEE}_{i,t} + \beta_6 \text{BIG}_{i,t} + \beta_7 \text{RLSK}_{i,t} + \beta_8 \text{SIZE}_{i,t} + \beta_9 \text{AGE}_{i,t} + \beta_{10} \text{Oper_D} + \beta_{11} \text{Location_D} + \epsilon_{i,t} \quad (5)$$

Where:

- | | | |
|---------------------|---|---|
| Tax_Benefit | = | Difference between fund basis and taxable basis |
| TAX | = | A "1" for the period the period between enforcement and expiration of Tax Reform for Onshore Fund and A "0" otherwise. Detailed variables are as follows: |
| TAX ²⁰⁰⁷ | = | Enforcement of Tax Reform for Onshore Fund, A "1" for t-4 week~ t-1week at June 1, 2007 and A "0" for t+1 week~t+4 week |
| TAX ²⁰⁰⁹ | = | Expiration of Tax Reform for Onshore Fund, A "0" for t-4 week~ t-1week at December 31, 2009 and A "1" for t+1 week ~ t+4 week |
| TAX×Exchg_Rate | = | Interaction variable of TAX and Exchg_Rate |
| Exchg_Rate | = | Change of exchange rate |

$$\frac{\text{Exchange rate}_t - \text{Exchange rate}_{\text{end of 2006}}}{\text{Exchange rate}_{\text{end of 2006}}}$$

Exp_R	=	Expected fund yield, pre-tax yield rate of 3 months
FEE	=	Natural logarithm of total fees
BIG	=	A “1” for big5 fund operating firms and A “0” for otherwise
RISK	=	Fund risk, STD of daily yield rate for 3 months
SIZE	=	Natural logarithm of fund size (initial net assets value)
AGE	=	Fund age (established date ~ current)
Oper_D	=	Operating firms dummy
Location_D	=	Investment destination dummy

Tax benefit: Difference between basis and taxable basis of mutual fund: In general, fund basis is the value derived from the division of the net assets of fund which reflects the dividend income of stock, liquid assets and interest income of bonds by per shares with which standard funds can be transacted. By contrast, since tax basis excluding interest income is the basis, dividend income and gain on disposal which are not taxed, are the taxation bases of funds. The companies managing the assets of funds determine the basis for each fund on a daily basis and exclude the non-taxed income from this basis for the calculation of tax basis which should be published. Gain on disposal and revaluation of the stocks listed on foreign markets, the two gains accruing from the stocks listed on domestic markets, gains of venture companies specified by Article 23 and Article 91 of Korea Income Tax Laws and the futures with these gains as underlying assets can be referred to as the incomes that are not taxed (Choi *et al.*, 2008). The difference between this basis and the tax basis can be defined as the tax benefit of non-taxation. Hence, as shown by equation below, Tax_Benefit is obtained by deducting the tax basis from basis and then dividing the resulting value by the basis:

$$\text{Tax_Benefit}_{i,t} = \frac{\text{Basis}_{i,t} - \text{Taxable_Basis}_{i,t}}{\text{Basis}_{i,t}}$$

where, in $\text{Basis}_{i,t}$ = Basis of fund i at t week and $\text{Tax Basis}_{i,t}$ = Taxable basis of fund i at t week.

If a temporary non-taxation policy is enforced for a certain period, the size of tax benefit will increase considerably for that period and subsequently reduced relatively. Accordingly, the variable of Tax Benefit was utilized to figure out if the existence of any reduced tax-burden on investors from June 1, 2007 to December 31, 2009, when the non-taxation policy was temporarily implemented to achieve gain on disposal and revaluation of onshore funds.

Variables for enforcement and expiration of tax reform for onshore mutual fund: This study measured the major interesting variables, namely, TAX^{2007} and TAX^{2009} , four weeks before the beginning date (June 1, 2007) of the enforcement and another four weeks after the expiration date (December 31, 2009) of temporary non-taxation policy on gain on disposal and revaluation of onshore funds.

In Fig. 1, TAX^{2007} , four weeks before the application of taxation and four weeks after taxation is defined as “0” and “1”, respectively. This variable is employed for the analysis of the tax effect before/after the beginning date (June 1, 2007) of the temporary policy. TAX^{2009} , four weeks before

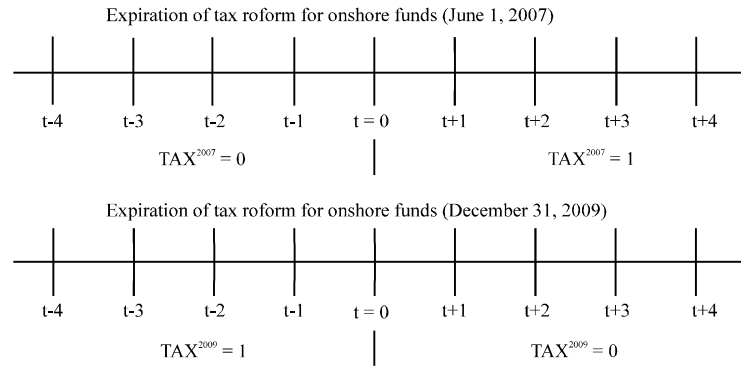


Fig. 1: Measurement of TAX (Tax^{2009}) variable

1 December 31, 2009 (period of non-taxation application) and four weeks after (period of taxation application) is defined as “1” and “0”, respectively to estimate the effect of the temporary implementation of non-taxation policy.

Control variables: The following control variables have been added to control the factors influencing the basis against the difference between fund basis and tax basis. First, since the weekly exchange rate for USD is based on onshore fund, gain and loss on foreign currency transactions exist depending on exchange fluctuation. In cases where exchange-rate rises, there will be some gains on foreign currency. However, since the gain on foreign currency is subject to taxation as a financial income under the temporary non-taxation policy on the onshore funds, the gap between fund basis and tax basis will be smaller. Consequently, exchange rate and the dependent variable are expected to show negative (-) relationship.

In addition, the control variables that indicate the rest features of the funds were determined in the same manner as that of Bergstresser and Poterba (2002). Considering that the expected yield rate on funds (Exp_R) is measured by the pretax yield rate in the recent three months and investors can make investment decisions based on their recent yield rates on funds, the dependent variable is expected to be influenced positively (+) (Zheng, 1999). Yoon and Lee (2011) and Cici *et al.* (2013) stated that the FEE of fund is also expected to have a positive (+) effect on the dependent variable based on the marketing capability of distributors and the professional technology support of the asset management companies. Furthermore, due to the fact that big-sized fund operating companies (BIG) have relatively greater information strength on inside fund-investment and better infrastructure, these are expected to show a positive (+) relation with the dependent variable and more sensitive reaction to tax burden (Park, 2005). Moreover, the risk of fund (RISK) was measured as the standard deviation of daily pretax yield rate in the recent three months similar to that in the study by Choi *et al.* (2008). It is natural that the risk of fund should get higher if the fluctuation of yield rate on funds in the past increases; thus, the risk is expected to show a negative (-) relation with the dependent variable. The size of fund (SIZE) was estimated by the natural log value of the first amount of setup fund which will show a positive (+) relation with the dependent variable (Park, 2007). Similarly, the age of fund (AGE) was measured by the number of years after the first setup date of fund survival based on the study of Yoon and Lee (2011). As a result, AGE was expected to have an effect on the dependent variable (Yoon and Lee, 2011). Moreover, the dummy of the fund-management companies ($\Sigma\text{Oper_D}$) and the dummy of the investment location ($\Sigma\text{location_D}$) are the variables

Table 1: Descriptive statistics of variables

Variables	N	Mean	STD	Minimum	1st quartile	Median	3rd quartile	Maximum
Tax-Benefit	1,904	0.158	0.223	0	0.024	0.114	0.211	0.301
Tax		0.500	0.500	0	0	0	1	1
Tax ²⁰⁰⁷		0.500	0.500	0	0	0	1	1
Tax ²⁰⁰⁹		0.500	0.500	0	0	0	1	1
Exchg-Rate		1.074	0.115	0.989	0.997	0.998	1.216	1.265
Exp-R (%)		1.841	0.873	0.368	1.264	1.559	2.162	7.980
FEE (%)		1.605	0.597	0.1	1.230	1.7	2.070	2.950
BIG		0.353	0.478	0	0	0	1	1
RISK (%)		1.215	0.528	1	1	1	1	4
SIZE		19.245	3.905	5.704	17.212	19.789	21.947	28.140
AGE		3.817	2.496	1	3	3	4	8

that control the operation capability of funds, the purpose of investment and the yield rate at each investment location which are expected to affect the dependent variable; hence, these are included in the study model.

Sample selection: This study selected the mutual funds invested abroad that satisfy the conditions stated below for the estimation of the extent of tax burden on the onshore funds according to the enforcement and expiration of temporary non-taxation policy for the onshore funds. In particular, overseas investment funds operated from the end of 2006 until the end of 2009 were selected¹. (1) Overseas investment funds which were set up on December 31, 2006 and remained in operation as of December 31, 2009 and (2) Funds from which such materials as fund basis and tax basis were derived from the FnSpectrum database.

Results of the samples selected based on the above mentioned conditions can be categorized according to the type of onshore funds and the year of fund setup. Until the year 2000, no onshore funds had been set up. Setting up began only in 2001 and sharply increased in 2005, a scenario that was made possible by the enforcement of the Indirect Investment Asset Management Business Act. The study selected 238 samples comprising 69 Asia-Pacific Stocks (onshore funds mainly invested in the Asia-Pacific countries), 51 newly developing Asia Stocks (onshore funds invested in the developing countries in Asia), 20 Global Stocks (onshore funds invested regardless of country or sector) and 19 overseas mixed-bonds (onshore funds where portfolio ratio of risky asset such as stocks is managed below average 40%) in the order of size by type (Table 1).

RESULTS AND DISCUSSION

Results of empirical analysis

Descriptive statistics: Table 1 indicates the descriptive statistics of the variables in this study. The average of the variable (Tax_Benefit) is 15.8% with a range of 0-30.1%. The tax basis is smaller by 15.8% than the fund basis (it is similar with the current tax rate, 15.4%). The tax variables Tax, Tax²⁰⁰⁷ and Tax²⁰⁰⁹ compose 50% of each sample. The exchange rate (Exchg_Rate) shows the average change rate of 107.4% for late 2006 which was before and after the implementation of the policy. The exchange rate sharply increases from 2007 to 2009. Moreover, the averages of the expected yield rate (Exp_R) and FEE (Sales and Operating-fees) are 1.841 and 1.605%, respectively. Averages for big fund management company (BIG), fund risk (RISK), fund size (SIZE) and age of fund (AGE) are 35.3, 1.215, 19.245% and approximately 3.8 years, respectively.

¹This reason is that the study objects to address the problem of survivorship bias that overestimated or underestimated yield rates has reported (Son and Lee, 2009; Yoon and Park, 2014)

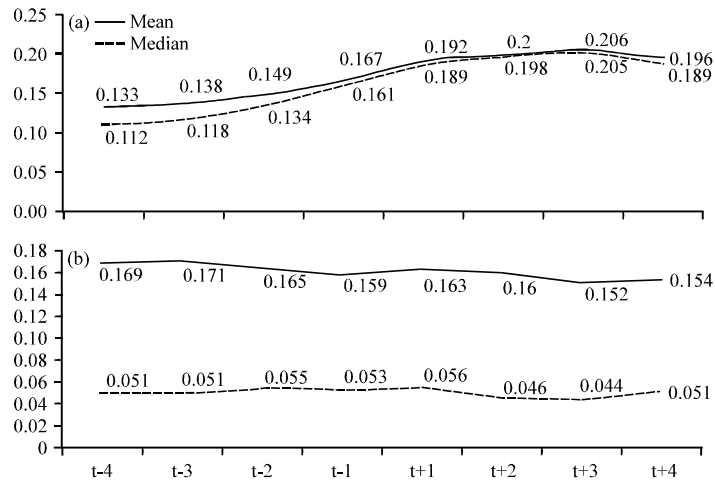


Fig. 2(a-b): Change of tax benefit mean and median, before and after (a) Enforcement and (b) Expiration of tax reform for onshore fund

Figure 2 shows the weekly units of the average value of tax benefit (Tax_Benefit) which is a dependent variable in this study and the trend of median. Figure 2a which shows the conditions before and after the application of temporary non-taxation on onshore funds reveals that it gradually increases from t-4 to t-1 (the period of taxation) when the gap between average value of Tax_Benefit and median is not huge (that is, the condition where the deviation by fund is not significant). Subsequently, the value sharply rises from t+1, the point of non-taxation applied. In essence, during the period when gain on disposal and revaluation of stocks listed on foreign markets is taxed, a tax benefit average of approximately 15% was achieved. By contrast, in the period of non-taxation, a tax benefit average of approximately 20% was attained. In particular, this phenomenon can be found at most onshore funds because these funds do not have a considerable deviation.

Moreover, Fig. 2b shows the conditions before and after the expiration of temporary non-taxation policy on onshore funds. The panel also shows the average which remained at approximately 16.6% from t-4 to t-1 when the non-taxation policy is applied and subsequently dropped from t+1 when the policy expired. This phenomenon has different features from that of Fig. 2a. First, a huge difference is evident between the average value of Tax_Benefit and the median. The median shows a steady trend of approximately 5%, whereas the average value is approximately 16%. This result indicates that tax benefits have big deviations, depending on the type of the onshore fund. Second, even though all investors enjoy the non-taxation policy after its enforcement and before its expiration, approximately 20 and 16.6% of differences exist. Considering that gain on foreign currency resulting from the overseas investment is not taxed, these differences are believed to have been caused by the excessive gain on foreign currency. Therefore, the rise of exchange rate before and after the expiration should be considered.

Results of univariate analysis: Table 2 shows the average difference of the variable, tax benefit (Tax_Benefit) at the points of enforcement and expiration of the temporary non-taxation policy on the onshore funds. The analysis of the average difference between the periods of overall taxation and non-taxation in Table 2 reveals that the tax benefit during the period of non-taxation

Table 2: t-test of tax burden: taxable and non-taxable period for onshore fund

Parameters	Taxable period (TAX = 0)		Non-taxable period (TAX = 1)		Mean-difference	
	Mean	STD	Mean	STD	Mean	t-stat
Period of tax reform for onshore fund (N = 3,808)						
t-1~t+1	0.166	0.218	0.180	0.219	-0.014	-1.74*
t-2~t+2	0.159	0.218	0.184	0.220	-0.025	-4.23***
t-3~t+3	0.154	0.217	0.188	0.221	-0.034	-7.09***
t-4~t+4	0.152	0.218	0.188	0.221	-0.036	-8.43***
Before enforcement of tax reform (TAX ²⁰⁰⁷ = 0): Taxable period		After enforcement of tax reform (TAX ²⁰⁰⁷ =1): Non-taxable period		Mean-difference		
	Mean	STD	Mean	STD	Mean	t-stat
Before/after enforcement of tax reform for onshore fund (N =1,904)						
t-1~t+1	0.167	0.181	0.192	0.181	-0.024	-2.87***
t-2~t+2	0.149	0.179	0.201	0.181	-0.051	-6.03***
t-3~t+3	0.138	0.178	0.206	0.180	-0.068	-8.15***
t-4~t+4	0.133	0.175	0.196	0.180	-0.063	-7.50***
Before sun-set of tax reform (TAX ²⁰⁰⁹ = 1): Non-taxable period		After sun-set of tax reform (TAX ²⁰⁰⁹ = 0): Taxable period		Mean-difference		
	Mean	STD	Mean	STD	Mean	t-stat
Before sun-set of tax reform for onshore fund (N = 1,904)						
t-1~t+1	0.163	0.280	0.159	0.275	0.004	0.22
t-2~t+2	0.160	0.278	0.165	0.286	-0.005	-0.24
t-3~t+3	0.152	0.270	0.171	0.295	-0.019	-1.02
t-4~t+4	0.184	0.311	0.165	0.294	0.015	0.67

*p<0.10, **p<0.05, ***p<0.01, two tailed

(TAX = 1) has a huge statistical significance. In addition, the estimation of the average difference before and after the enforcement of the non-taxation policy shows that the tax benefit during its application (TAX²⁰⁰⁷ = 1) has a considerably high statistical significance. Moreover, the analysis of the average difference before and after implementation indicates that the difference between the period of taxation and that of non-taxation is not statistically significant. This phenomenon allows the inference that although fund investors might enjoy any tax benefit after the implementation of the temporary non-taxation policy on the onshore funds, they are aware that they will not be able obtain this tax benefit when its expiration comes.

Results of multi regression analysis: Table 3 shows the result of the analysis on whether the policy actually reduced the investors' tax burden. The value of F in each analysis is more than 41 which is statistically significant. The value of Adj.R2 is also more than 36.4% which highlights the absence of serious problems in the model's goodness-of-fit and explanatory power.

The analysis on the object of all samples shows that the variables of tax factor (TAX) and exchange fluctuation (Exchg_Rate) have significant positive (+) and negative (-) symbols at the level of 1%, respectively. Furthermore with the inclusion of interactive variable (TAX×Exchg_Rate), these two variables maintain the statistically significant level despite the significantly negative (-) relation shown by this interactive variable. The variables of tax factor (TAX²⁰⁰⁷) and exchange fluctuation (Exchg_Rate) in the samples show significantly positive (+)

Table 3: Effects of tax reform for onshore fund on the investor's tax burden

Variables	Predicted sign	Pooled sample		Before/after enforcement of tax reform		Before/after sun-set of tax reform	
		------(TAX)-----	------(TAX ²⁰⁰⁷)-----	------(TAX ²⁰⁰⁷)-----	------(TAX ²⁰⁰⁹)-----		
Intercept	?	-0.092	-0.173**	-0.803***	-0.089**	0.548	0.576
TAX	+	0.023***	0.163**	0.465***	0.242***	0.016	-0.255
TAX×Exchg-Rate	-		-0.132*		-0.241***		0.216
Exchg-Rate	-	-0.129***	-0.191***	-0.310***	-0.204***	-0.333	-0.356
Exp_R	+/-	-0.067***	-0.050***	-0.022***	-0.020***	-0.095***	-0.095***
FEE	+	0.094***	0.090***	0.094***	0.104***	0.021**	0.021**
BIG	+	-0.013	-0.018	-0.020***	-0.020**	0.091***	0.091***
RISK	-	-0.014**	-0.012*	-0.03***	-0.016***	-0.008	-0.008
SIZE	+	-0.001	-0.002	-0.001	-0.004	-0.002*	-0.002*
AGE	+	-0.019**	-0.021**	-0.027**	-0.046***	-0.005	-0.004
∑Oper-D		Included					
∑Location-D		Included					
Observation No.		3,808		1,904		1,904	
F-stat.		41.45***	41.21***	46.99***	48.32***	131.87***	126.39***
Adj. R2		0.364	0.371	0.496	0.512	0.838	0.837

*p<0.10, **p<0.05, ***p<0.01, two tailed

relations at the level of 1%. These findings are evidence that the overseas-fund investors obtained tax benefits through this policy. The interactive variable (TAX×Exchg_Rate) shows a negative (-) symbol at the statistically significant level. This result indicates that any rise in the exchange rate results in the gain on foreign currency. Consequently, the tax benefit decreases, a remarkable result obtained after the enforcement of the temporary non-taxation policy.

However, tax factor (TAX²⁰⁰⁹), exchange fluctuation (Exchg_Rate) and interactive variable are not statistically significant before and after the expiration of the non-taxation policy. This observation implies that the policy did not offer any tax benefit of statistical significance to the investors. The underlying reason for the absence of tax benefits before and after its enforcement can be explained by the variable of exchange fluctuation (Exchg_Rate). Conclusively, a relatively small gain on foreign currency before and after its implementation at a time when exchange fluctuations are not severe creates a larger gap between fund basis and tax basis. Consequently, a conspicuous tax benefit is produced. However, a huge gain on foreign currency at the time of the sunset day of the policy when exchange rate soared was achieved. The gain led to the rise of tax basis which made the tax benefit relatively insignificant. Accordingly, it can be assumed that the exchange fluctuations immensely influenced the efficiency of the temporary non-taxation policy for the onshore funds.

Except for fund risk (RISK), the variables with the rest features show statistically significant results. Expected yield rate (Exp_R) and fund age (AGE) take on a negative relation at the level of statistical significance which indicates that the higher the expected yield rate of fund, the smaller the tax benefit. If the setup period of funds is longer, the investors cannot provide any efficient consideration to the intention of raising their after-tax yield rate. In addition, the total fee of fund (FEE) shows a positive (+) relation at the level of statistical significance which corresponds to the argument of Ippolito (1989) and Grinblatt and Titman (1992) the investors will input relatively more effort into searching and collecting information when funds need higher fee, simultaneous with their initiative to obtain more information on capital markets to secure proper timing for fund

Table 4: Change of window of tax reform enforcement

Variables	Predicted sign	Window-zoon out			
		Window-zoon in t-5~t+5	t-3~t+3	t-2~t+2	t-1~t+1
Intercept	?	1.079***	1.644***	0.294	-0.014*
TAX ²⁰⁰⁷	+	0.221***	0.237***	0.209***	0.195***
TAX ²⁰⁰⁷ ×Exchg_Rate	-	-0.279***	-0.363***	-0.387**	-0.324***
Exchg_Rate	-	-0.233***	-0.217***	-0.205***	-0.157***
Exp_R	+	-0.019***	-0.020***	-0.020***	-0.020***
FEE	+	0.108***	0.105***	0.113***	0.101***
BIG	+	-0.023***	-0.023**	-0.024***	-0.021**
RISK	-	-0.020***	-0.017***	-0.016***	-0.015***
SIZE	+	-0.007	-0.005*	-0.005*	-0.008
AGE	+	-0.051***	-0.049***	-0.054***	-0.053***
ΣOper-D	+	Included			
ΣLocation-D	-	Included			
Observation No.		2,380	1,428	952	476
F-stat		51.09***	34.00***	33.75***	17.03***
Adj. R ²		0.574	0.567	0.665	0.654

*p<0.10, **p<0.05, ***p<0.01, two tailed

management and to improve the capability of selecting stocks and constructing fund-folio. Moreover, the variable of big-sized fund-management company (BIG) first showed a negative (-) relation at the level of statistical significance before and after the implementation of the policy and a positive (+) relation at the level of statistical significance before and after its expiration. This phenomenon can be interpreted to mean that even though investors could not invest effectively for their higher after-tax yield rate because it has been difficult for them to anticipate the exchange fluctuations at the time of its enforcement, they could efficiently invest at the time of its expiration. The latter investment is engaged in to reduce their tax burden in a situation with relatively high exchange rate².

Table 4 shows the results from the analysis of tax benefits before and after temporary enforcement of non-taxation policy on onshore funds as conducted by expanding or contracting the window of estimation. The value of F at the analysis model is more than 17 at the statistically significant level and Adj.R2 is more than 56.7%. These results show that the model does not have any serious problem in terms of the goodness-in-fit and explanatory power. Interactive variable shows a negative (-) relation at the condition in which both tax factor (TAX²⁰⁰⁷) and exchange fluctuation (Exchg_Rate) have positive (+) and negative (-) relations at the statistically significant level when the windows are expanded and contracted before and after the temporary implementation of non-taxation policy on the onshore funds. The robustness of the findings of the present study reconfirms that the gain on foreign currency brought about by the rise in exchange rate reduces the effect of this policy (tax benefit for investors) even though the policy created the effect of tax-benefit offering (reduction of tax burden) for the fund investors. The control variables, together with the rest fund-features, show results that are analogous to those in Table 3.

Table 5 presents the analysis of the results from the expanding and contracting window, before and after the expiration of the temporary non-taxation policy on the onshore funds. Tax factor (TAX²⁰⁰⁹), exchange fluctuation (Exchg_Rate) and interactive variable show statistically

²This can be explained as fund tournament phenomenon (Carhart *et al.*, 2002; Bergstresser and Poterba, 2002)

Table 5: Change of window of tax reform expiration

Variables	Predicted sign	Window-zoon out			
		Window-zoon in t-5~t+5	t-3~t+3	t-2~t+2	t-1~t+1
Intercept	?	0.314	0.187	0.088	0.094
TAX ²⁰⁰⁹	+	0.122	0.576	0.167	0.137
TAX ²⁰⁰⁹ ×Exchg-Rate		-0.093	-0.456	-0.132	-0.114
Exchg-Rate	+/-	-0.120	-0.161	0.118	0.177
Exp-R	+	-0.115***	-0.114***	-0.037**	-0.067**
FEE	+	0.028***	0.027**	0.003	0.013
BIG	+	0.099***	0.101***	0.069***	0.086**
RISK	-	-0.009	-0.009	-0.009	-0.009
SIZE	+	-0.003**	-0.003*	-0.001	-0.002
AGE	+	-0.009***	-0.005**	-0.004**	-0.002**
ΣOper-D	+	Included			
ΣLocation-D	-	Included			
Observation No.		2,380	1,428	952	476
F-stat		136.24***	79.89***	97.97***	29.10***
Adj. R ²		0.816	0.811	0.885	0.804
Adj. R ²		0.816	0.811	0.885	0.804

*p<0.10, **p<0.05, ***p<0.01, two tailed

insignificant results which are different from those before and after its implementation. These results imply that the policy did not have any effect (tax benefit for investors) at the time of its expiration even if it was a temporary non-taxation policy. Eventually, the exchange rate increases much higher than that of late in 2006 and led to the inclusion of the gain on foreign currency and tax basis in the gain on foreign currency which resulted in the relatively small gap between fund basis and tax basis.

Expected yield rate (Exp_R) among the control variables showing fund-features reveals that a negative (-) symbol of statistical significance indicates the reduction in that the gap between fund basis and tax basis when the revenue from the future funds is expected to rise. Furthermore, the fund fee (FEE) partly shows a positive (+) symbol of statistical significance. This finding corresponds to the result of Ippolito (1989) and Grinblatt and Titman (1992) that argued that funds requiring higher total fee require from investors relatively more efforts in searching and collecting the information on fund-management companies. The rest of the control variables show features similar to those of Table 4.

CONCLUSION

The Korean government implemented the temporary non-taxation policy on the onshore funds which did not impose tax the gains on disposal and revaluation of the stocks listed on foreign markets from June 1, 2007 to December 31, 2009. However, this policy maintained its position to tax the gain on foreign currency produced by the exchange fluctuation as a financial income. In this taxation policy, the standard of assessment becomes larger than 0 at the time of a big rise of exchange rate, even when the yield rate of the onshore funds is negative (-). As a result, the tax burden on fund investors increases.

Accordingly, this study investigated if this temporary non-taxation policy on the onshore funds reduced the fund-investors' tax burden at all. Changes to the tax benefit after its enforcement and

expiration were verified. In particular, the tax benefit was defined as the difference between fund basis and tax basis, where the net asset of fund is the value that has been calculated by the pre-tax fund profit for fund basis and by the standard of after-tax profit for tax basis, divided by the number of funds. Consequently, the gap between these two was defined as the gain from the disposal of the stocks listed on overseas markets.

The following results were obtained. First, in the pooled sample which integrated the enforcement and expiration of temporary non-taxation policy, the tax benefit during the application on non-taxation showed more statistically significant level than during the application of taxation. In general, the non-taxation policy actually offered fund investors a kind of tax benefit. By contrast, tax benefit showed a significantly negative (-) correlation between exchange fluctuation and tax benefit which can be explained by the increase in the tax basis which addressed the gap. Moreover, the negative correlation can be explained by the decrease in the fund basis brought about by the increase in exchange rate which consequently produced foreign currency gains. Second, the analysis on the objects of samples before and after its implementation revealed that the tax benefit after the enforcement of non-taxation policy had a higher statistical significance as well as a negative (-) correlation between exchange fluctuation and tax benefit at the statistically significant level. In addition, the level of exchange rate during the same period was shorter than that of late 2006. Fund investors enjoyed the tax benefit at the time of its implementation because of the absence of any gain on foreign currency and because of the slight increase in the exchange rate.

Third, the analysis of the sample before and after the expiration of the policy revealed that no statistically significant difference existed between the tax benefits before and after its expiration. Moreover, no statistical significance in the correlation between exchange fluctuation and tax benefit was derived. This result highlighted that the increase of the tax burden on fund investors was the effect of taxing the gain on foreign currency which was larger than that of the non-taxation for gains on disposal and revaluation of stocks listed on overseas markets.

Finally, when the robustness of the analysis was verified by the expanded or contracted window of analysis samples, the non-taxation policy was shown to have worked before and after the consistent enforcement of the policy but not at the time of its expiration.

The findings from this study are relevant because the political effect of enforcing the non-taxation policy on the onshore funds from 2007 to 2009 was empirically analyzed. Additionally, the findings also provide practical contributions. These include the political implication that tax status for gain and loss on foreign currency caused by the exchange fluctuations should be considered if any tax benefit is to be offered. Offering tax benefits can substantially stimulate investment stimulation because the exchange factors play a key role in the international capital transactions.

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