

Taxes and the Investment of Mutual Funds - Evidence from the German Investment Tax Reform

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ABSTRACT: Using a hand-collected data set of German mutual funds obtained from financial statements for the years 2015 to 2020, we investigate the impact of the German Investment Tax Reform on the investment decision of mutual funds. By using the change in tax law as a quasi-natural experiment, we provide empirical evidence that German equity mutual funds increased their investment in domiciles offering zero or low withholding taxes on dividends after the reform. Furthermore, the effect of shifting investments towards low taxed countries leads to a decrease in the fund-level tax burden. Altogether, our findings shed, in general, light on the use of tax-efficient investment strategies of mutual funds.

Keywords: Dividend Taxes, Mutual Funds, Investment Decisions, Tax Avoidance

JEL Classifications: H26, G23

1. Introduction

We investigate to what extent mutual fund investment portfolios are composed in accordance with incentives resulting from international tax rate differences under a non-transparent fund tax regime. To this end, we exploit a natural experiment resulting from the German Investment Tax Reform 2018 and investigate the implications of this reform on the composition of 200 German equity mutual funds' investment portfolios.

Mutual fund investments are of utmost importance for the retirement savings of private individuals, but also for the capital access of the corporate sector.¹ At the end of 2021, the worldwide regulated open-ended fund assets had a value of 67.3 trillion euro (EFAMA, 2022a), which is equivalent to more than 70 percent of worldwide GDP. Despite of its distinct economic relevance, relatively little is known, so far, about the extent to which tax planning considerations influence fund managers' investment decisions. In light of the asymmetric treatment of different types of fund income (dividend income, unrealized capital gains, realized capital gains) prevalent in most countries worldwide, prior literature has documented that mutual funds can reduce their tax burden by investing in firms with low dividend yields as well as by strategically timing the realization of capital gains and capital losses (Bergstresser and Poterba (2002), Sialm and Zhang (2020)). Other studies investigate the economic implications of mutual funds' tax burdens with regard to the performance and attractiveness of investment funds (e.g. Dickson and Shoven (1995), Bergstresser and Pontiff (2013)). Our paper sheds light on a new channel of tax planning offered by the German Investment Tax reform 2018, i.e. the shifting of fund assets to countries offering low withholding tax rates on dividend income.

¹ In recent years the role of institutional investors in public equity markets increased significantly. In 2019, institutional investors own about 41 percent of the capital markets, on a global average. The European average is 38 percent. Moreover, there is a trend to pool assets, e.g. investment in mutual funds (e.g. OECD, 2019).

The German tax reform under scrutiny offers an ideal setting to analyse tax planning of mutual funds. First, the reform offers novel opportunities for the tax efficient structuring of mutual funds. Most countries worldwide (including Germany until 2017) employ a transparent fund tax regime, meaning that fund income is taxed in the hands of the fund investors, whereas any withholding tax incurred in relation to foreign fund assets can be credited. Under such a fund tax regime, foreign withholding taxes are only of an interim nature, meaning that the final investor-level tax burden is independent from the rate of foreign withholding taxes. In contrast, Germany has introduced a non-transparent fund tax regime as of 01/01/2018, according to which domestic dividends are subject to a corporation tax of 15 percent at fund level, whereas foreign dividends are finally taxed at the withholding tax rate prevalent in the foreign (source) country. Under this tax regime, funds can not only reduce the tax burden by avoiding high-dividend investments and by strategically timing the realization of capital gains and losses, as in most other fund locations, but also by shifting investment to countries with low withholding tax rates. Second, the German fund market is relevant in economic terms, as Germany (asset value of 2.8 trillion euro) constitutes the third largest fund market in Europe and the fifth largest worldwide (Bundesbank, 2022). Moreover, German investors constitute the largest group of investors in European mutual funds with a total investment of 3.8 trillion euro in 2021 (BVI, 2022).

We hypothesize that, after the reform, German equity mutual funds have an incentive to shift (equity) investments to foreign countries offering low withholding tax rates, particularly if the investment relates to stocks with high dividend yields. However, it is not obvious whether funds actually invest in accordance with these incentives. We know from extant literature that funds make use of other strategies to reduce the tax burden (investment in low-dividend firms, timing of realizing capital gains and losses). Nonetheless, fund managers may respond less to incentives that involve a shifting of investments across countries, since, e.g., fund managers may, in this respect, be restricted in their decision by regulations included in the fund

prospectus. Besides, fund investors may have a preference for investments in their home country, making a cross-border shifting of investments less attractive (e.g. Chan et al. (2005), Hau and Rey (2008), Coval and Moskowitz (1999), Maier and Scholz (2019)).

While there is very limited empirical evidence for a shifting of fund assets to low tax countries², prior literature has documented that foreign portfolio investments (FPI) are negatively associated with the withholding tax rate offered by the foreign source country (see, e.g., Amiran and Frank (2016), Desai and Dharmapala (2011), Jacob and Todtenhaupt (2022)), whereas Riedle (2016) and Egger et al. (2006) document the same for foreign direct investments (FDI) by multinational firms. Again, however, these findings cannot necessarily be translated to the composition of investment portfolios by mutual funds. Foreign portfolio investment is usually an aggregate of individual household as well as different types of institutional investments. Furthermore, most of these studies focus on the foreign equity holdings of U.S. investors or use aggregate country level data to measure the investments from specific countries in a particular investment domicile.

We use a hand-collected panel of data obtained from the annual financial statements of 400 German mutual funds for the years 2015 to 2020 to empirically test our hypothesis. All mutual funds included in the sample are actively managed and do not rely on any specific investment regulation (e.g. portfolio limitation). Our data contains a rich set of fund-level (2,400 fund-year observations) and asset-level information (222,759 fund-asset-year observations). We employ two identification strategies to investigate tax planning of German equity mutual funds after the reform. First, we use a difference-in-differences research design based on fund-level and fund-investment country-level data with German debt mutual funds serving as our control group in order to analyse the shifting to foreign countries offering low withholding tax rates. The income of debt funds largely consists of interest income, which is

² An exception is the study by Chan et al. (2005) that finds a small negative effect of withholding tax rates on foreign fund investments.

usually not subject to a foreign withholding tax. Debt mutual funds are therefore not subject to similar tax planning incentives. Second, we exploit within-country heterogeneity and analyse, based on a triple diff-in-diff design, whether investments in high (low) withholding tax countries have a below-average (above-average) dividend yield after the reform.

Our results conclusively show that German equity mutual funds adjusted investment portfolios in accordance with our theoretical predictions after the reform. After the tax policy change, equity mutual funds increased their proportion of foreign investment to total equity investment by 2.66 percent compared to the respective control group, on average. More specifically, the Investment Tax Reform leads to an outward-shifting of investments in the amount of 15 million euro per fund. Our findings further strongly suggest an incentive of equity mutual funds investing in countries the lower the respective withholding tax rate on dividends as we observe the highest shift of investments in domiciles with dividend tax rates of zero percent. Furthermore, our result conducting a triple diff-in-diff design confirm our expectation of an increased incentive of avoiding withholding taxes after the change in tax law. We find a semi-elasticity of -0.0044, showing a negative relation between foreign withholding tax rates and investments in stocks with higher dividend yields.

Our findings have strong economic and policy implications as we shed more light into the tax efficient structuring of mutual funds. More specifically, we show that equity mutual funds have restructured their portfolio in order to avoid equity investment in countries with high withholding taxes (in favour of investment in countries with very low withholding tax rates or stocks with low dividend yields in countries with higher dividend taxes) after the change in tax law. Furthermore, to the best of our knowledge our study presents one of the first to analyse more closely the implication of a non-transparent fund tax regime.

The remainder of this paper proceeds as follows. The next section presents prior literature and highlights our contribution. Section 3 discusses the institutional setting and

derives our hypothesis. Section 4 introduces our empirical strategy. Section 5 outlines our data and discusses descriptive statistics. Section 6 provides our main results and several robustness checks. Section 7 concludes.

2. Related Literature

Mutual funds are portfolios of securities that are organized by a management company and sold to the public. Investors (e.g. institutional or private investors) then purchase shares of them to current market prices (Barclay et al. (1998)). As mutual funds are specific investment vehicles, they are subject to separated tax rules. Therefore, their incentive of avoiding taxes is not necessarily comparable to those of corporations. In most countries worldwide, mutual funds' taxable income is not subject to tax at fund level and thus, primarily taxed at shareholders level with their personal tax rate.³

Due to the transparent tax regime, holding mutual funds shares is a classic externality for investors, as their tax burden depends on the portfolio choices of mutual funds' manager. Therefore, some studies investigate empirically the tax awareness of funds, i.e. to what extent fund manager consider investor-level taxes in their portfolio decisions. Jeffrey and Arnott (1993) look at the relationship between U.S. mutual funds turnover and shareholders taxes. Their findings show that 95 percent of active managed funds underperform index funds on an after-tax basis in the respective years. Thus, they suggest that taxable investors should primarily invest in mutual funds with relatively passive investment strategies to generate higher returns after taxes. Dickson and Shoven (1995) show further that published pre-tax based rankings of mutual funds differ considerably from after-tax rankings. Altogether, these studies indicated that mutual fund manager seem to pay very little attention to shareholders taxes and thus, generate low after-tax returns for their investors. However, Arnott, Kalesnik and Schuesler

³ To retain their specific tax status, mutual funds may have to fulfil some additional requirements. For example, U.S. mutual funds have to distribute a certain proportion of their income to retain their "pass-through" tax status.

(2018) revisit the findings of Jeffrey and Arnott (1993) and show that tax awareness and advancements in the tax efficiency of mutual funds has increased considerably over the last 25 years.

A small strand of literature looks at the determinants of investment locations of mutual funds (Chang et al. (2005), Mishra (2014)). Chang et al. (2005) confirms the existence of home bias of fund investments as well as a negative relation between foreign investments and dividend tax rates. However, their findings show that the country-specific stock market development and the familiarity with an investment domicile (measured by common language and average distance in kilometres) play a more important role for the foreign investment bias. In contrast, withholding taxes as well as economic development and capital controls have a smaller impact.

Another strand of this literature focuses on the different channels that mutual funds may use for tax planning. According to Bergstresser and Poterba (2002) mutual funds can reduce their tax burden by (1) avoiding investments in firms with high dividend yields, (2) accelerating the realization of capital losses and (3) deferring the realization of capital gains. Del Guercio (1996) examines more general the role of dividends in portfolio selection of institutions. She finds that firm's dividends yields are no determinant of banks' portfolio choice, but may serve as a negative indicator in mutual funds' investment strategies. Furthermore, Sialm and Stark (2012) show that mutual funds primarily held by taxable investors increase their dividend income after a decrease in dividend taxes due to the U.S. dividend and capital gains tax cut in 2003. Therefore, their findings suggest a negative relationship between withholding taxes on dividends income and mutual funds' investments. Other studies investigate more generally the preferences of U.S. institutional investors choosing stock holdings (e.g. Gompers and Metrick (2001), Bennet, Sias and Starks (2003), Grinstein and Michealy (2005)). Overall, their findings also indicate a negative effect of firms' dividend yields and stock holdings including different

institutions. However, some of these studies not considered tax disadvantages as a potential determination of this effect. Investigating more closely in the trade of between shares repurchases and dividend income of firms, Brav et al. (2005) find that taxes play a secondary role in investment choices of institutional investors. Moreover, it is not clear, to what extent these findings can be transferred to the determinations of portfolio choices of mutual funds. As Del Guercio (1996) show, there can be different incentives of avoiding taxes between different types of institutional investors.

Other papers focus on the tax-motivated trading of active fund managers in order to reduce capital gains taxes. Bhabra et al. (1999) and Gibson et al. (2000) investigate the tax-loss selling of mutual funds as a dominant explanation for the seasonality of U.S. stock returns. From a theoretical point of view, funds benefit from the systematic selling of non-profitable shares at tax year end to minimize their net capital gains and consequently reduce taxable distributions to shareholders. Due to this selling pressure market prices of these stocks bounce back after the end of the tax year. Using the U.S. Tax Reform Act 1986 as a quasi-natural experiment, which replaced non-synchronous tax year-ends with a similar one for all U.S. funds, they find that the change in tax law is associated with a tax-efficient restructuring of mutual funds. Due to the tax reform mutual funds accelerated the sale of losers prior to their new, synchronous tax year. Their findings strongly support the tax-loss selling hypotheses, as a similar effect was not found for other types of institutions either before or after the change in tax law. Fong et al. (2009) examine the effect of another change in capital gains tax law that was enacted in Australia in 1999. This reform introduced a 50 percent discount in capital gains taxes for assets exceeding a holding period of 12 months. They document that fund managers significantly have increased the proportion of long-term capital gains after the reform. Huddart and Narayanan (2002) examine the impact of capital gains taxes on mutual funds' decisions to sell stocks. Depending on the type of investors, they observe a greater incentive in selling

stocks, since the liquidation triggers a certain capital loss. Thus, they find a significant relation between unrealized gains and losses and stock sales, in particular for growth funds.

Another strand of this literature investigate the economic implications of a tax efficient structuring of mutual funds. Some studies document a relation between the tax burden and the performance (or ranking) of funds. Dickson and Shoven (1995) observe that tax externalities at fund level affect the after-tax performance, but were not consider in published mutual funds ranking for the observed years (1963-1992). Sialm and Zhang (2020) extend these findings and show a significant effect also on the before-tax performance. Bergstresser and Pontiff (2013) show that tax burdens reduce the return differentials between different types of funds. The investor-level tax burden also affects the amount of capital inflows of funds. Bergstresser and Poterba (2002) presents evidence that after-tax returns have more explanatory power than pre-tax returns in explaining capital inflows to mutual funds. Confirming the theoretical model by Barclay et al. (1998), they also show that large amounts of unrealized capital gains make mutual funds less attractive for new investors. Studying a range of fund characteristic, Ivkovic and Weisbenner (2005) further find that the fund turnover ratio, the historical share of taxable returns distributed to shareholders and the funds capital gains overhang are positively related to fund outflows of taxable investors. Otherwise, for non-taxable investors these characteristics does not play a (major) role in redemption decisions of their mutual funds shares.⁴

Altogether, prior literature provides conclusive evidence that mutual funds optimize their investment portfolio in response to tax incentives. The majority of these papers, however, relates to the investment decisions and tax planning of U.S. mutual funds (e.g., Dickson et al. (2000), Huddart and Narayanan (2002), Sialm and Starks (2012)), Sialm and Zhang (2020))⁵,

⁴ There are several studies investigate the impact of different tax clienteles on the tax awareness of mutual funds. Their findings indicate more efficient tax planning of mutual funds primarily held by taxable investors (e.g. Sialm and Starks (2012), Akkemeah et al. (2018), Dimmock et al. (2018)).

⁵ Evidence for other fund domiciles is provided by Fong et al. (2009).

which operate under a transparent fund tax regime. Exploiting the tax planning and economic implication of the German fund tax reform 2018 allows us to extend this literature in at least three dimensions. First, and most importantly, our paper is one of the first to assess the implications of a non-transparent tax regime for investment funds. Since this reform shifts parts of the overall tax burden on fund investments to the fund-level, it offers new channels for tax optimization and may also increase the general awareness of funds for tax issues. Second, the non-transparent tax regime increases the attractiveness of equity investments in countries with low withholding tax rates on dividends. Considering this reforms thus allows us as one of the first to assess whether funds shift investment beyond borders to optimize their tax position (see also Chan et al. (2005)), whether this behaviour depends on the type of fund tax regime, and what economic consequences are associated with such a cross-border shifting of investments. Third, we contribute to generalizing prior findings by providing evidence for a non-U.S. fund domicile, which offers a contribution by itself since we know from the corporate tax avoidance literature that European multinationals and U.S. multinationals not necessarily avoid taxes to the same extent.

The relevance of withholding taxes on investment decisions has been evaluated in prior literature in relation to other types of investment. Several studies investigate the impact of withholding taxes on foreign portfolio investments (FPI). Desai and Dharmapala (2011) use the U.S. Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) in 2003 to examine the effect of personal taxes, especially withholding taxes, on portfolio choices. As JGTRRA introduced a dividend tax rate for U.S. equities and several companies domiciled in a subset of foreign countries, they find a portfolio reallocation by U.S. investors towards equity issued by firms domiciled in treaty countries. Amiram and Frank (2016) confirm their findings by examining similar dividend tax reforms in other countries with bilateral country-level data of from International Monetary Fund (IMF). They investigate the “indirect” effect of changes in

domestic shareholders' dividend tax rates on foreign investor's portfolio allocation. More specifically, they look at to what extent an increase in domestic dividend taxes in a specific country affects inbound investments. Their empirical test provides evidence for a positive relation of domestic shareholders tax rate and allocation of foreign investor's investment portfolio to these countries. Furthermore, Jacob and Todtenhaupt (2022) analyze the effect of compliance costs for reclaiming withholding taxes on foreign portfolio holdings. Using aggregate country data of bilateral foreign portfolio holdings as well as individual data of U.S. institutional investors in foreign countries, their findings show that withholding tax overpayments negatively affect investments in foreign companies due to the high compliance costs to international investors in claiming foreign tax credits. Although these studies conclusively document a negative relation between portfolio allocation and withholding tax rates, the findings cannot be directly transferred to the portfolio choice of mutual funds. Most of these paper focus on foreign portfolio investment as an aggregation of household and institutional investments, not separately investigating in the effects on the different investor types, e.g. mutual funds. As shown in other studies the incentive of tax efficient portfolio allocation can vary between different institutions (e.g. Del Guercio (1996)).

The relevance of foreign withholding taxes has also documented for the (foreign direct) investment decisions of multinational firms. While comprehensive empirical evidence exists on the relevance of corporate tax rates for foreign direct investments (see, e.g., the meta-studies by De Mooij/Ederveen (2003) and Feld/Heckemeyer (2011)), a smaller strand of literature has also pointed to the impact of foreign withholding taxes. Riedle (2016) investigates the impact of withholding taxes on foreign direct investments of multinationals. Using firm-level panel data, his results show a remarkable additional negative effect of dividend taxes on foreign investments. Egger et al. (2006) examine the association of withholding taxes and multinational activity in an earlier study. Their findings suggest a negative relationship between the host

country's withholding tax rate and outbound FDI. Furthermore, they report a semi-elasticity of -1.61 for the withholding tax rate on repatriated profits and a semi-elasticity of -1.43 for the host countries corporate tax rate. Other studies basically confirm a negative relation between withholding tax and FDI (e.g. Haberly and Wójcik (2015), Lejour (2014)). Again, it is not clear, however, to what extent these findings from the corporate sector can be transferred to a fund manager's portfolio choice. On the one hand, taxes on mutual fund income are in most countries collected at investor level (transparent taxation) and, thus, dependent upon individual circumstances that the fund manager does not ultimately know. Similarly, foreign corporate investment decisions are assumed to be affected by corporate tax rates, whereas shareholder taxes may play a minor role.⁶ This argument could speak for a smaller influence of taxes on fund-level investment decisions. On the other hand, operative costs (e.g., production costs, transportation costs, etc.) may restrict a free allocation of (operative) investments in the corporate sector, whereas fund (capital) investments should rely rather on risk-reward considerations. This argument could rather speak for a stronger tax elasticity of fund investments.

3. Institutional Background & Hypothesis Development

In most countries worldwide, mutual funds are taxed as pass-through conduits, meaning that the funds' ordinary income (e.g. dividend and interest income) and net realized gains are only and ultimately taxed at the investor level. Depending on country-specific regulations, mutual funds have to distribute a certain percentage of their profits to maintain their pass-through tax status. Before 31 December 2017, the German investment tax law also provided for such a transparent fund tax regime. The fund's earnings were only taxed once at the investor level with their personal tax rate. For foreign ordinary income that was already taxed in the

⁶ There is a little empirical evidence of the effects of shareholder taxes allocation of internal investments. Alstadsæter et al. (2017), Becker et al. (2013) and Chetty and Saez (2010) show that dividend tax affects affect allocation of corporate investments. Foreign investments may not be influenced by domestic shareholder taxes as there is no tax credit at all of foreign withholding taxes due to ne non-transparent tax regime for corporations

source country, the former rules additionally offered a tax credit for foreign withholding taxes at investor level. The resultant tax burden was, thus, at least equal to the investor's domestic personal income tax rate, which was 26.38 percent in case of a private investor. Foreign withholding taxes could be credited up to this tax rate and, therefore, had the character of an interim tax, only. To maintain their pass-through tax status, German investment funds were not obliged to distribute a certain percentage of their income, but they had to publish their taxable income (clustered in different income types) in the electronic Federal Gazette ("Elektronischer Bundesanzeiger") no later than four months after the business year-end. Even though there was no distribution obligation for mutual funds in Germany, the mutual funds income was still subject to tax at shareholders level due to a fictional distribution at the business year-end.⁷ Contrary to foreign income, domestic taxes on German dividend income were directly withheld from the mutual funds' shareholders. Therefore, the withholding taxes shown in the financial statements of equity mutual funds resulted basically from source taxes on foreign ordinary income. As interest income is basically not subject to any taxes at source, the equity mutual funds' tax burden was primarily driven by foreign withholding taxes on dividend income in regard to the prior regulations.

The change in tax law that we are investigating in this study was part of the German Investment Tax Reform 2018, which introduced a non-transparent tax regime for mutual funds. In contrast to a transparent tax regime, as described above, the new regulations now provide for a taxation of domestic income at the fund level at the corporation tax rate of 15 percent. Domestic income includes especially dividend income, rental income and other income that would be subject to tax in Germany due to taxable inbound investments (Sec. 49 EStG). Foreign

⁷ Note that there could have been specific tax regulations for some types of income. For example, interest income is primarily not subject to source taxes in most of the countries worldwide or any domestic tax at mutual fund level. Therefore, it were taxable first if it was (fictional) distributed by the mutual fund to the shareholder. In contrast, realized capital gains remained tax-free as long as the gains were reinvested at mutual fund level. Unrealized gains were not subject to any tax unless the investors sell their mutual fund shares.

income (e.g. dividend income) may still be subject to foreign withholding tax, but, besides, is now regarded as tax-free fund income in Germany. Therefore, foreign withholding taxes constitute an ultimate tax burden. Withholding taxes apply to dividend income, whereas interest income and capital gains are not subject to withholding taxes in most of the countries worldwide. This type of income is, therefore, usually taxed only upon distribution of fund income to the investors. In contrast to prior regulations, fund investors now have to pay taxes on the mutual funds' profits regardless the origin and the type of income. In the process of determining these investor-level taxes, investors can no longer credit foreign withholding taxes. Thus, the new regulations lead to a double taxation of the funds' earnings, both for domestic and foreign-source income. The German legislator reduces the economic consequences of this double taxation by allowing for a partial exemption of the funds' income at shareholder level (Sec. 20 GITA). This partial exemption varies across fund type (e.g. equity fund, mixed fund or other fund) and investor clienteles (e.g. institutional investors or private investors). For income accumulating growth funds, the legislator introduced due to the German Investment Tax Reform a pre lump sum taxation. Therefore, shareholders have to pay taxes at least for the capital gain of their mutual funds shares apart from any distribution of the fund.

To show the effects of this change in investment tax law more closely, table 1 und table 2 compare the calculated total tax burden before and after the change in investment tax law based on simple examples for foreign and domestic dividend income as well as interest income. For the calculations above, we assume a full distribution of mutual funds income to the shareholders.

TABLE 1: Taxation of foreign dividends before and after the German Investment Tax Reform

	Withholding Tax Rate 5%		Withholding Tax Rate 15%	
	Prior Regulations	New Regulations	Prior Regulations	New Regulations
Mutual Fund Level				
Foreign Dividend Income	100.00 €	100.00 €	100.00 €	100.00 €
Withholding Tax	5.00 €	5.00 €	15.00 €	15.00 €
Shareholder Level				
Distribution Fund (taxable)	100.00 €	95.00 €	100.00 €	85.00 €
- Partial Exemption (30%)		-28.50 €		-25.50 €
Tax Base	100.00 €	66.50 €	100.00 €	59.50 €
Tax Rate (26.38%)	26.38 €	17.54 €	26.38 €	15.69 €
- Foreign Tax Credit	-5.00 €		-15.00 €	
Shareholder Tax	21.38 €	17.54 €	11.38 €	15.69 €
Total Tax Burden	26.38 €	22.54 €	26.38 €	30.69 €

This table represents two simple examples to show the difference in total tax burden (fund-level and shareholder-level) for foreign dividend income considering a withholding tax of 5 percent and 15 percent on foreign dividend income before and after the German Investment Tax Reform.

TABLE 2: Taxation of domestic/ foreign interest and domestic dividends before and after the German Investment Tax Reform

	Domestic/Foreign Interest Income		Domestic Dividend Income	
	Prior Regulations	New Regulations	Prior Regulations	New Regulations
Mutual Fund Level				
Interest/ Dividend Income	100.00 €	100.00 €	100.00 €	100.00 €
Withholding Tax	0.00 €	0.00 €	26.38 €	15.00 €
Shareholder Level				
Distribution Fund (taxable)	100.00 €	100.00 €	100.00 €	85.00 €
- Partial Exemption (0 % [†] / 30%)				-25.50 €
Tax Base	100.00 €	100.00 €	100.00 €	59.50 €
Tax Rate (26.38%)	26.38 €	26.38 €	26.38 €	15.69 €
Shareholder Tax	26.38 €	26.38 €	26.38 €	15.69 €
Total Tax Burden	26.38 €	26.38 €	26.38 €	30.69 €

This table represents two simple examples to show the difference in total tax burden (fund-level and shareholder-level) for interest income and domestic dividend income before and after the German Investment Tax Reform. [†] We assume a debt mutual fund for the calculation of the total tax burden of domestic/foreign interest income. Therefore, we consider no partial exemption regulation here.

The results show that under the former investment fund tax regime, the overall tax burden was irrespective from any foreign withholding tax, since withholding taxes could be credited against the investor-level income tax. Under the new regulations, a ten percentage points higher withholding tax results in an increase of the overall tax burden by 8.15 percentage points. Although the partial exemption of fund distributions reduces the economic implications of this rule, the withholding tax difference becomes effective to more than 80 percent. Note that the new regulation provide for a reduced withholding tax of 15 percent for mutual funds on

domestic dividend income. Therefore, table 2 show that domestic dividend income is now equally taxed as dividends from firms located in countries with a withholding tax of 15 percent. In contrast to dividend income, interest income is basically not affect by the change in tax law as we can see in table 2.

TABLE 3: Descriptive Summary of Withholding Tax Rates

	Count	Mean	SD	Median	Min	Max
WHT	145	10.54165	0.0951828	0.1	0	0.35

This table represents some descriptive measurements of the withholding tax rates including 145 sample countries. *WHT* is the withholding tax rate per country in percentage.

As illustrated by the examples included in tables 1 and 2, the new German fund tax regime offers equity mutual funds opportunities to reduce the overall tax burden for their investors by tax efficiently structuring the fund’s investment portfolio. Shifting equity investments to foreign countries reduces the overall tax burden if the dividend withholding tax rate in the foreign country is below 15 percent. Table 3 summarizes the withholding tax rates on dividends in our 145 sample countries. Since the average foreign withholding tax rate is 10.54 percent, and thus clearly below 15 percent, foreign equity investments are, on average, subject to a lower overall tax burden than domestic equity investments after the reform. Hereby, investments in countries with a very low withholding tax rate are particularly attractive for tax reasons. We, thus, formulate our first two null hypotheses as follows.

H1: After the implementation of the non-transparent tax regime for mutual funds, the share of foreign equity investments in total equity investments increases.

H2: After the implementation of the non-transparent tax regime for mutual funds, the share of equity investments per country is negatively associated with the withholding tax rates on dividends in this country.

The relevance of withholding tax rates depends positively on the dividend yield of the fund investments. We therefore expect that funds have an incentive to invest in foreign stocks

with high (low) dividend yields if the foreign withholding tax rate on dividends is high (low). If funds invest in accordance with all of these incentives, then we expect, finally, that the effective tax burden of equity mutual funds, representing the withholding taxes on foreign dividends, has declined after the reform. We formulate our hypotheses 3 and 4 in accordance with these considerations.

H3: After the implementation of the non-transparent tax regime for mutual funds, equity mutual funds invest more in foreign stocks with high (low) dividend yields if the foreign withholding tax rate on dividends is low (high).

H4: After the implementation of the non-transparent tax regime for mutual funds, the effective tax burden of equity mutual funds has declined.

All hypotheses rely on the assumption that fund managers respond with their investment decisions to tax incentives. Extant literature has documented that both foreign direct investments of multinational firms and foreign portfolio investments respond to withholding tax rate incentives (see section 3). It is not clear, however, to what extent these findings can be transferred to the portfolio choice of mutual funds, even though extant literature has also documented a general awareness of fund managers for tax issues. First, it remains an empirical question how flexible fund managers are in shifting investment beyond borders, since this decision may, e.g., be restricted by regulations in the fund prospectus. Second, the incentive to shift investments to low tax countries has only changed after the reform if the fund manager has considered the investor-level tax credit for foreign withholding tax rates prior to the reform. It is not clear, however, to what extent fund managers reflect investor-level tax consequences in their decisions.

4. Empirical Strategy

We test the four hypotheses developed in section 3 based on three different fixed effects panel regression models. Hypotheses 1 and 2 are tested with a diff-in-diff regression model based on fund-level data (hypothesis 1 and 2) or fund-investment country-level data (only hypothesis 2).

As discussed above, the tax law change under scrutiny has removed the possibility for mutual funds and their investors to credit foreign withholding taxes against their domestic tax burden. As a consequence, German mutual funds can now minimize the overall tax burden of their investors by reducing foreign source taxes. As withholding taxes arise primarily from holding equity investments (e.g. stocks) with high payout ratios, the German Investment Tax Reform leads to an increased incentive to shift equity investments towards countries with low dividend taxes. We, thus, expect this reform to affect, in particular, equity mutual funds (treatment group), as their portfolio consists primarily stock holdings. In contrast, debt mutual funds invest the vast majority of their capital in bonds and thus, their income consists primarily of interest income, which is usually not subject to a foreign withholding tax. We, therefore, assume that debt mutual funds (control group) are not incentivized by the reform to shift investments to low-withholding tax countries (see also the example in table 2 in this respect). We regard German debt mutual funds as a reasonable control group, also since they are subject to the same regulatory environment.

We expect according to hypothesis 1 and 2 that equity mutual funds have increased the investment in foreign assets (hypothesis 1) or foreign assets in countries with low withholding tax rates (hypothesis 2) after the reform relative to mutual debt funds. We test these hypotheses based on fund level data using the following diff-in-diff regression model.

$$\text{ForeignInvestment}_{i,t} \text{ or } \text{LowTaxInvestment}_{i,t} = \alpha_i + \beta_1 \text{reform}_t + \beta_2 \text{reform}_t * \text{treatment}_i + \delta X_{i,t} + \varepsilon_{i,t}. \quad (1)$$

ForeignInvestment_{i,t} depicts the value of mutual funds' *i* foreign investments in a specific year *t* divided by the total equity investments in year *t* and is used as explanatory variable in order to test hypothesis 1.⁸ More specifically, we aggregate for each equity mutual fund the market value of foreign stocks held and divide it by the accumulated market value of total stock holdings. To this end, we exploit the information on each fund's investment portfolio as reported in the fund's financial statement at year-end.

LowTaxInvestment_{i,t} depicts the value of equity or debt investments in countries offering a low dividend withholding tax on dividend income in a specific year *t* divided by the total of equity or debt investments of the respective mutual fund *i* and is used as explanatory variable in order to test hypothesis 2. We distinguish three different categories of low-tax countries in alternative specifications. *WHTGroup0* includes all investment domiciles with a dividend withholding tax rate of zero. *WHTGroup10* and *WHTGroup15* capture all countries with a dividend withholding tax rate of ten percent (and lower) or 15 percent (and lower), respectively.

Reform_i is a dummy variable that equals one if observations belong to the post-reform period (2018 and later). *Treatment_i* is an indicator variable, equals one for observations of equity mutual funds and zero otherwise. The explanatory variable of main interest is the interaction term *Reform_i*Treatment_i*. According to both hypothesis 1 and 2, we expect a positive coefficient for the diff-in-diff term. *X_{i,t}* is a vector of controls. We control for the fund's share price (*NAVperShare*), the size (*NetAssetValue*), the funds' age (*FundAge*), expenses (*ExpenseRatio*) and growth (*ReturnInvestment*) and the overall trend in capital markets (*MSCI*)

⁸ This definition refers to the calculation for our treatment group of equity funds. We adapt this calculation for measuring *ForeignInvestment_{i,t}* for debt mutual funds by replacing stock investments with bond investments as well as total market value of stock holding with the total market value of debt holdings.

as well as bond markets (*ECBInterestRate*, *FEDInterestRate*).⁹ We also add fund-fixed effects α_i to our model.

The investment decision of mutual fund managers should also be driven by other (non-tax) country-level determinants. In order to additionally control for these influences, we test hypotheses 2 also based on a fund-investment country-level regression, which allows us to additionally include country-level controls. The resultant regression model is described by equation (2).

$$\text{Investment}_{i,j,t} = \alpha_i + \gamma_j + \beta_1 \text{reform}_t + \beta_2 \text{reform}_t * \text{treatment}_i + \delta X_{i,t} + \theta_{j,t} + \varepsilon_{i,j,t} \quad (2)$$

*Investment*_{*i,j,t*} reflects the total market value of mutual fund *i*'s equity or debt holdings in country *j* in a specific year *t* divided by the accumulated market value of total equity or debt holdings held by mutual fund *i* in year *t*. We calculate *Investment*_{*i,j,t*} for all 145 sample countries *j* for each mutual fund *i*.¹⁰ In order to identify the relevance of the withholding tax rate level, we split the sample in accordance with the dummy variables *WHTGroup0=1*, *WHTGroup10=1* or *WHTGroup15=1*. The coefficient estimate of main interest is then, again, the interaction term *Reform_t*Treatment_i*. We expect to find stronger positive effects for *Reform_t*Treatment_i* in the sub-samples with low withholding tax rates.

Using country-level data allow us to additionally control for investment country influences in country *j* as well as to include investment country fixed effects γ_j . In this respect, we control for the statutory corporate tax rate (*CorporateTaxRate*), the annual growth in GDP (*GDP*), the inflation rate (*Inflation*), the corruption index (*CPI*), the market capitalization

⁹ To control further for the funds' level of investment in foreign countries, we add *ForeignAssets_{i,t}* to the set of control variables when testing hypothesis 2.

¹⁰ If there is no investment in one of these countries, the variable *Investment*_{*i,j,t*} equals zero for this specific country.

(*MarketCapitalization*), Moodys' country risk rating (*CountryRisk*), the S&P Global Equity Index per country (*GlobalEquityIndex*) and the annual stock turnover (*StockTurnoverRatio*).

To further ensure that our results are not driven by any significant differences between equity and bond markets, we use a triple diff-in-diff model based on fund-asset-level data to test hypothesis 3. This hypothesis relies on the assumption that equity mutual funds should increase the investment in stocks with high (low) dividend yield after the reform if the withholding tax rate on dividends is low (high) in the respective country. We, thus, exploit within-country differences here and no longer rely on debt funds as a control group. The resultant regression model is presented in equation (3).

$$\begin{aligned} \text{StockInvestment}_{x,i,t} = & \alpha_i + \gamma_j + \beta_1 \text{reform}_t + \beta_2 \text{WHT}_{j,t} + \beta_3 \text{DividendYield}_{x,t} + \beta_4 \text{reform}_t * \text{WHT}_{j,t} \\ & + \beta_5 \text{reform}_t * \text{DividendYield}_{x,t} + \beta_6 \text{WHT}_{j,t} * \text{DividendYield}_{x,t} \\ & + \beta_7 \text{reform}_t * \text{DividendYield}_{x,t} * \text{WHT}_{j,t} + \delta X_{i,t} + \theta_{j,t} + \varepsilon_{ij,t}. \end{aligned} \quad (3)$$

StockInvestment_{x,i,t} depicts the market value of mutual funds *i*'s holdings of stock *x* for a specific year *t* divided by the accumulated market value of total equity holdings of mutual fund *i* in year *t*.¹¹ We include *WHT_{j,t}* and *DividendYield_{x,t}* as our main explanatory variables. *WHT_{j,t}* is the dividend withholding tax rate of the domicile of stock, which is included as a continuous variable in our model above. *DividendYield_{x,t}* depicts the dividend yield for a specific stock investment *x* in year *t*, which is calculated as the accumulated dividend payment per share of stock *x* in year *t* divided by the average annual stock price in year *t*. Again, we include fund and country specific control variables as already considered in the previous models and control for overall capital market trends (*MSCI*). Furthermore, we add fund fixed effects α_i and investment country fixed effects γ_j to our model. The explanatory variable of central interest is the triple interaction term *Reform_t*WHT_{x,t}*DividendYield_{x,t}*. To confirm hypothesis

¹¹ For purposes of a better interpretation, we multiply the calculated ratio with 100.

3, we expect the estimated coefficient of the interaction term to be negative and statistically significant.

If equity mutual funds adjust their investment portfolios in accordance with new tax incentives after the reform, as predicted by hypothesis 1, hypothesis 2 and hypothesis 3, then we should also observe lower fund-level effective tax rates after the reform. We therefore estimate equation (3), as described below, as an additional test for our two hypothesis.

$$\text{EffectiveTaxRate}_{i,t} = \alpha_i + \beta_1 \text{reform}_t + \delta X_{i,t} + \varepsilon_{i,t}. \quad (4)$$

The dependent variable *EffectiveTaxRate_{i,t}* depicts the effective tax rate of mutual fund *i* in year *t*. We calculate the *EffectiveTaxRate_{i,t}* of fund *i* as the total of withholding taxes paid in a specific year *t* divided by the foreign income from dividend and interest payments. We disregard domestic income for the determination of our effective tax rate. Before 2018, there was no withholding tax on German dividend income shown in the financial statements of mutual funds, as the taxes were withheld directly from their investors. After the change in tax law, mutual funds are subject to German withholding taxes on dividends by themselves. Therefore, the tax is withheld directly from the mutual fund and shown as domestic tax expenses separately in the financial statements after 2017. Not considering this fact may bias the change in the effective tax rate after the implementation of the new regulations. Besides, the tax burden at the fund level is mainly derived by foreign income, as taxes are withheld especially on foreign dividend income (see Section 4). Again, *Reform_t* is a dummy variable that equals one if the observation refers to the post-reform period (2018 and later). Since mutual debt funds are usually not subject to withholding tax for the majority of their income, we use an OLS regression with fund fixed effects (but without control group), here.

5. Data & Descriptives

We use a hand-collected and balanced panel of data obtained from the annual financial statements of 400 German mutual funds for the years 2015 to 2020. The annual financial statements of German mutual funds are available from the electronic Federal Gazette (“Elektronischer Bundesanzeiger”) for each year since the mutual fund was launched. For each mutual fund and each year, we download the relevant annual report and collect by hand information, e.g., on balance sheet, profit and loss statement and mutual funds holdings.

All mutual funds included in the sample are actively managed and do not rely on any specific investment regulation. More specifically, we exclude mutual funds with specific portfolio restrictions (e.g. country specific investment preferences) as well as ETF funds, as they are not actively managed. We also drop funds of funds.¹² We collect data for 200 equity mutual funds (treatment group) and 200 debt mutual funds (control group). To identify the mutual funds relevant for our research, we scan prospectus of each German mutual fund established before 2015 to drop passive-managed mutual funds, mixed mutual investment funds and funds with further investment restrictions. About 300 equity funds fulfil these requirements. We select 200 funds from this list, based on the total assets under management of the mutual funds management company.

Our fund-level data contains general historical information (e.g. fund’s name, number of shareholders, payout-ratio), but also information on the mutual funds’ portfolio holdings at the business year-end as well as further financial information (e.g. amount and source of income, taxes paid, realized and unrealized gains/losses). We further add mutual fund data from Thomson Reuters, e.g. mutual funds’ expense ratios and launch dates. Altogether, we create a rich mutual fund data panel. Additionally, we merge the information on fund holdings with

¹² Funds of funds are mutual investment funds that only invest in other mutual funds. As they have no impact on the investment decisions of their mutual fund holding, we further excluded them from our sample.

financial data from Thomson Reuters on these holdings, which we use, e.g., in order to classify holdings as equity (e.g. stocks), debt (e.g. bonds) or other securities as well as for the calculation of the stock-year specific dividend yield. After merging the data and further classify the asset types of mutual funds' holdings, we calculate the total value of mutual funds' investment per asset type (equity, debt or other security), country and year. To this end, we exploit the information on each fund's investment portfolio as reported in the fund's financial statement at year-end. Furthermore, we use hand-collected the country-specific withholding tax rates for each year observed.¹³

Our final sample contains 2,400 fund-year observations, 257,130 fund-investment country-year observations and 222,759 fund-investment asset-year observations for the years 2015 to 2020.

TABLE 4: Descriptive Statistics

	Equity Mutual Funds			Debt Mutual Funds		
	Mean	SD	Median	Mean	SD	Median
NetAssetvalue	642,636.9	3,033,387	54,459.5	286,234	1,150,197	73,182.73
NAVperShare	160.0519	404.4172	81.26206	143.0976	524.25	61.42186
EquityRatio	.7960492	.2582397	.9134781	.0024367	.0301179	0
DebtRatio	.04886	.138071	0	.809321	.2767665	.9340115
ReturnInvestment	.0857153	.3900835	.0308922	.0348951	.3854207	-.0173458
SharesOutstanding	3,970.223	12,852.74	671.9643	5,586.442	31,974.27	977.0705
PayoutRatio	.4234124	8.790696	0	.1910711	16.93566	.9861425

This table represents some descriptive measurements of equity and debt mutual funds. Data from the financial statements of German mutual funds. The observation units are fund-year observations. *NetAssetvalue* is the mutual funds' net asset value per year in thousand euro. *NAVperShare* is the net asset value divided by the shares outstanding to each business year-end in euro. *EquityRatio* and *DebtRatio* is the accumulated market value of total stock holdings and total bond holdings of each mutual fund divided by the mutual fund's net asset value in percentage. *ReturnInvestment* is the growth of the mutual fund's net asset value in comparison to prior year. *SharesOutstanding* is the number of shares outstanding per year in thousand units. *PayoutRatio* is the dividend of the mutual funds to their investors divided by total income per year and mutual fund. Yearly data from 2015 to 2020.

Table 4 shows some descriptive statistics for the equity and debt mutual funds included in our sample. Equity mutual funds invest to 79 percent in equity holdings, while investments in debt assets amount to 4.8 percentage points. In contrast, the holdings of debt mutual

¹³ We obtain our withholding tax data from Withholding Tax Study 2015 to 2020 (KMPG), PwC Worldwide Tax summary and the deductible foreign withholding tax tables 2015 to 2020 (Bundeszentralamt für Steuern).

investment consist primarily of debt assets. Furthermore, table 4 shows that the net asset value per share do not differ between equity and debt mutual funds to any significant extent. Equity mutual funds show, on average, a higher return (0.086 compared to 0.035) and a higher distribution ratio (0.42 compared to 0.19).

6. Empirical Results

6.1. Baseline Results

We empirically analyze in this section to what extent the German Investment Tax Reform 2018 and the inherent incentive to shift investments to countries featuring low withholding tax rates has affected the investment behaviour of German equity mutual funds. To ensure that our results do not suffer from any bias related to general investment trends, i.e. that certain (low-tax) countries have become more attractive as an investment location for economic reasons, we choose a difference-in-differences setting to test our hypotheses described in section 3 empirically. Our natural experiment is based on the notion that interest income is not subject to withholding tax in most countries and, therefore, no similar incentive to shift debt investments to countries with low withholding tax rates exists.

According to hypothesis 1, we expect that equity mutual funds have increased the investment in foreign assets after the reform. We start our analysis by investigating graphically the development of investments in foreign countries by our treatment and control group. Figure 1 shows descriptively the average foreign investments for our treatment group (equity mutual funds) and control group (debt mutual funds) across our observation period. The first vertical line depicts the last year prior to the tax reform (2017), the second vertical line depicts the first

year under the non-transparent fund tax regime (2018).¹⁴ The trend of investing in foreign assets for both fund types prior to 2017 is very similar for both groups of funds. After the change in law, there is a significant increase of foreign investment of equity mutual funds, contrary to a decrease depicted in figure 1 for debt mutual funds. Figure 1 also indicates a common trend prior to the reform, which is a necessary requirement for applying a difference-in-differences design.

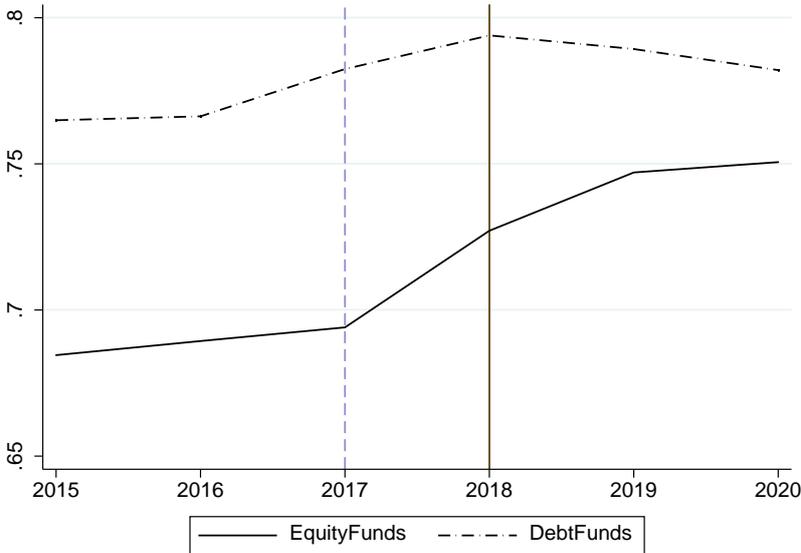


FIGURE 1: Ratio of investments in foreign countries

Table 5 reports the regression results for our diff-in-diff analysis for the general shifting in foreign assets in columns (1) and (2). *ForeignInvestment* measures the ratio of the accumulated market value of foreign assets to the total market value of equity and debt at the business year-end of each mutual fund. We define assets as the equity investment (e.g. stocks) for equity mutual funds and as the debt investment (e.g. bonds) for mutual debt funds. We use the plain ratio of *ForeignInvestment* in specification (1) and the natural logarithm of it in specification (2). Confirming our hypothesis 1, the coefficient estimated for the interaction term

¹⁴ As our data sample only includes fund-year observation. The first vertical line depicts the last observations based on the prior fund tax regime and the second vertical line depicts the first observations subject to the new regulations.

*reform*treatment* turns out positive and statically significant in both columns. After the change in tax law, equity mutual funds increased their *ForeignInvestment* by an average of 2.66 percent point more compared to the respective control group. To show further that our results are not driven by a decrease in foreign assets in both groups, we additionally perform the regression shown in equation (1) focusing on the part of our data only including observations of German equity mutual funds. The results shown in table 13 in Appendix A confirm our Hypotheses 1 strongly. Due to the tax reform in 2018, equity mutual funds increase their *ForeignInvestment* by 3.70 percent points, on average. Since the pre-reform average of total equity investment amounts to 414 million euro, this marginal effect is equivalent to an outward-shifting of investments in the amount of about 15 million euro per fund. In other words, the overall effect amounts to approximately 3 billion euro for the two hundred equity funds in our sample.

As discussed in section 4, an increase in foreign investments is not necessarily the outcome of tax planning considerations. We, therefore, analyze more closely in specifications (3) to (8) whether investments are actually shifted to countries with low withholding tax rates on dividends, as predicted by our hypothesis 2. To this end, we replace *ForeignInvestment* by *LowTaxInvestment*, which covers only investments in countries with withholding tax rates equal to or below a certain threshold. This threshold amounts to zero percent in column (3) and (4), ten percent in column (5) and (6), and 15 percent in column (7) and (8). Hereby, we use the plain ratio in specification (3), (5) and (7) as well as the natural logarithm of it in specification (4), (6) and (8). While for all of these countries, the tax burden on dividends received by the fund is below the tax burden on domestic dividends, we expect stronger positive coefficients for the interaction term *Reform*Treatment* the lower the respective threshold is. Our regression results confirm this expectation. While we estimate a coefficient of 0.0093 in column (3) and the semi-elasticity of 0.1270 in column (4) for the lowest withholding tax thresholds, the

coefficients for *Reform*Treatment* are considerably smaller and statistically insignificant at conventional levels in specification (6) and (8).¹⁵

¹⁵ Again, we additionally show the robustness of our results reported in table 5 by using a standard fixed effects model for equity mutual funds without control group (see table 13 Appendix A specification (3) to (5)). After the change in tax law, equity mutual funds increased their *LowTaxInvestment* in countries with zero withholding taxes by 2.10 percent points and in countries with dividend taxes close-to-zero (ten percent and lower) by 1.93 percent points, on average.

TABLE 5: Diff-in-Diff Results Foreign Investment and Low Taxed Investment (Fund-level Data)

	(1)	(2)	(3)		(4)		(5)		(6)		(7)		(8)	
			WHTGroup0				WHTGroup10				WHTGroup15			
	Foreign Investment	Foreign Investment (log)	LowTax Investment	LowTax Investment (log)	LowTax Investment	LowTax Investment (log)	LowTax Investment	LowTax Investment(log)	LowTax Investment	LowTax Investment(log)	LowTax Investment	LowTax Investment(log)	LowTax Investment	LowTax Investment(log)
Reform	0.0152 (0.66)	-0.0180 (-0.46)	-0.0090 (-0.90)	-0.0673 (-0.64)	-0.0062 (-0.60)	-0.0435 (-0.43)	-0.0070 (-0.53)	0.0013 (0.02)						
Reform*Treatment	0.0266* (1.95)	0.0394* (1.72)	0.0093* (1.75)	0.1270** (2.16)	0.0036 (0.63)	0.0621 (1.11)	-0.0028 (-0.31)	0.0104 (0.26)						
NAVperShare	-0.0000 (-1.08)	-0.0000 (-0.33)	0.0000 (1.35)	0.0000 (0.99)	-0.0000 (-1.09)	-0.0000 (-1.31)	-0.0000*** (-6.01)	-0.0000*** (-4.28)						
NetAssetvalue	-0.0018 (-0.17)	-0.0103 (-0.59)	-0.0466 (-1.57)	-0.5655*** (-3.81)	-0.0494* (-1.66)	-0.6560*** (-4.44)	-0.0624** (-2.08)	-0.4265*** (-3.79)						
ExpenseRatio	-0.0035 (-0.54)	-0.0093 (-1.02)	0.0010 (0.41)	-0.0138 (-0.59)	0.0012 (0.43)	-0.0145 (-0.66)	-0.0018 (-0.49)	-0.0087 (-0.54)						
FundAge	0.0022 (0.49)	-0.0023 (-0.36)	-0.0037* (-1.87)	-0.0422** (-2.32)	0.0009 (0.40)	-0.0170 (-0.95)	0.0004 (0.16)	-0.0169 (-1.28)						
ReturnInvestment	-0.0025 (-0.28)	0.0084 (1.01)	0.0012 (0.44)	-0.0075 (-0.27)	0.0003 (0.11)	-0.0104 (-0.37)	-0.0028 (-0.98)	-0.0151 (-0.87)						
ForeignAssets			0.0335* (1.77)	0.5245*** (3.82)	0.0376* (1.95)	0.5993*** (4.45)	0.0479** (2.16)	0.4110*** (3.95)						
MSCI	0.5457 (0.64)	-2.1062 (-1.40)	-0.1503 (-0.46)	-0.7066 (-0.20)	-0.0183 (-0.05)	-0.7958 (-0.23)	-0.2653 (-0.61)	-0.6482 (-0.31)						
ECBInterestRate	0.0971 (0.41)	-0.7188* (-1.71)	-0.0562 (-0.61)	-0.8405 (-0.80)	0.0540 (0.56)	-0.3962 (-0.39)	-0.0645 (-0.52)	-0.5458 (-0.88)						
Constant	0.7810*** (3.87)	-0.3819 (-1.23)	0.4300* (1.73)	-0.8254 (-0.84)	0.4084 (1.64)	-0.5993 (-0.61)	0.5339** (2.09)	-1.0052 (-1.53)						
Fonds FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes						
Observations	1,867	1,791	1,791	1,653	1,791	1,656	1,791	1,740						
Adj. R-sq	0.8380	0.9023	0.8290	0.7107	0.8958	0.7657	0.8947	0.8496						

This table represents the Diff-in-Diff results for equation (1). Data from financial statements of mutual funds. The observational units are fund-year observations. The dependent variable *ForeignInvestment* in column (1) and (2) is the ratio of the market value of total foreign equity or debt investment to total equity or debt investment per mutual fund and year. The dependent variable *LowTaxInvestment* in column (3) to (8) is the ratio of total market value of equity or debt investment in countries with withholding tax rates equal to or below a certain threshold to total equity or debt investment per mutual fund and year. The threshold amounts is zero percent in column (3) and (4), ten percent in column (5) and (6), and 15 percent in column (7) and (8). *Reform* is a dummy variable that equals one for observations after 2017 and zero otherwise. *Treatment* is a dummy variable equals one for observations from equity mutual funds and zero otherwise. *NAVperShare* and *NetAssetvalue* is the net asset value per share and the natural logarithm of the net asset value per mutual fund and year. *ExpenseRatio*, *FundAge* and *ReturnInvestment* is the funds' expense ratio, the funds' age and the growth of the mutual fund's net asset value in comparison to prior year per mutual fund and year. *ForeignAssets* is the natural logarithm of the market value of total foreign equity or debt investment. *MSCI* and *ECBInterestRate* is the relative change of the MSCI World Index at the end of each year compared to prior year and the ECB key interest rate to the end of year. See Table 12 in Appendix A for further variable definitions. All specifications include fund fixed effects. Yearly data from 2015 to 2020. Standard errors clustered at fund level in parentheses.* Indicates significance at the 10% level, ** indicates significance at the 5% level, *** indicates significance at 1% level.

Our findings in table 5 above may be biased, if the choice for the investment location of fund assets is driven by other (non-tax) country characteristics, for which we cannot control in table 5. We therefore re-estimate these latter specifications using fund-investment country-year level data. This allows us to control for further country characteristics, like GDP (*GDP*), the inflation rate (*Inflation*), the Corruption Perceptions Index (*CPI*), the market capitalization (*MarketCapitalization*), the Moody's country risk rating (*CountryRisk*), the country specific statutory corporate tax rate (*CorporateTaxRate*), the S&P Global Equity Index per country (*GlobalEquityIndex*) and the stock turnover ratio (*StockTurnoverRatio*). Regression results are reported in table 6 below. In order to capture the influence of different levels of foreign withholding tax rates, we, here, split the sample according to the different thresholds of foreign withholding tax rates (countries with withholding tax rates of zero in specifications (1) and (2), countries with withholding tax rates of below and equal to ten percent in specifications (3) and (4), countries with withholding tax rates of below and equal to 15 percent in specifications (5) and (6)). Again, we use the plain ratio in specification (1), (3) and (5) as well as the natural logarithm of it in specification (2), (4) and (6).

TABLE 6: Diff-in-Diff Results Low Taxed Investment (Country-level Data)

	(1)	(2)	(3)	(4)	(5)	(6)
	WHTGroup0		WHTGroup10		WHTGroup15	
	Investment	Investment (log)	Investment	Investment (log)	Investment	Investment (log)
Reform	-0.0007 (-1.18)	0.0016 (0.02)	-0.0007* (-1.80)	-0.0962 (-1.12)	-0.0000 (-0.05)	0.0186 (0.24)
Reform*Treatment	0.0014*** (3.63)	0.1575** (2.22)	0.0009*** (3.00)	0.1232* (1.72)	0.0001 (0.19)	0.0175 (0.27)
NAVperShare	0.0000*** (5.78)	-0.0000 (-0.87)	0.0000** (2.16)	0.0000*** (2.75)	-0.0000 (-0.28)	0.0000** (2.48)
NetAssetvalue	-0.0007* (-1.80)	-0.1269 (-0.49)	-0.0007** (-2.53)	-0.3101 (-1.19)	-0.0008* (-1.94)	-0.0946 (-0.49)
ForeignAssets	0.0003 (1.20)	-0.1405 (-0.54)	0.0004** (2.39)	0.0421 (0.16)	0.0003 (0.89)	-0.1752 (-0.87)
FundAge	0.0002 (1.36)	0.0054 (0.13)	0.0002** (2.25)	0.0188 (0.62)	0.0002* (1.76)	0.0038 (0.15)
GDP	0.0000* (1.88)	0.0000 (1.16)	0.0000*** (2.63)	-0.0000 (-0.75)	0.0000* (1.77)	-0.0000 (-1.08)
Inflation	0.0001*** (4.15)	0.0088 (0.95)	-0.0000 (-0.13)	-0.0136*** (-3.40)	-0.0000 (-1.23)	-0.0150*** (-3.99)
CPI	0.0000 (0.43)	-0.0204** (-2.27)	0.0000 (1.36)	-0.0094 (-1.29)	-0.0000 (-0.16)	-0.0064 (-0.88)
MarketCapitalization	-0.0000 (-1.30)	-0.0000 (-0.52)	-0.0000 (-1.19)	-0.0000 (-0.54)	-0.0000 (-0.66)	0.0000 (0.21)
CountryRisk	-0.0002 (-1.32)	-0.0421 (-1.17)	-0.0000 (-0.13)	-0.0031 (-0.14)	0.0001** (2.12)	0.0346 (1.63)
CorporateTaxRate	0.0082*** (3.24)	1.3207 (1.29)	0.0032* (1.71)	-0.3205 (-0.39)	-0.0029 (-0.61)	-2.0393** (-2.37)
GlobalEquityIndex	0.0000 (0.67)	0.0019*** (2.63)	0.0000 (1.28)	0.0020*** (3.20)	0.0000 (0.73)	0.0010** (2.02)
StocksTurnoverRatio	0.0000 (0.64)	0.0003 (0.14)	-0.0000 (-0.18)	-0.0003 (-0.36)	-0.0000*** (-2.63)	-0.0008 (-1.51)
MSCI	-0.0093 (-1.42)	-2.0136 (-0.81)	-0.0113** (-2.18)	-4.6029** (-2.17)	-0.0024 (-0.44)	-1.2542 (-0.62)
ECBInterestRate	0.0024 (0.93)	-0.1405 (-0.27)	0.0024 (1.54)	-0.3616 (-0.89)	0.0041** (2.10)	0.2245 (0.53)
FEDInterestRate	-0.0000 (-0.13)	-0.0480 (-1.50)	0.0001 (0.55)	-0.0019 (-0.08)	0.0000 (0.20)	0.0002 (0.01)
Constant	0.0081 (0.96)	2.1086 (1.57)	0.0031 (0.59)	1.0391 (0.96)	0.0097* (1.75)	1.2452 (1.24)
Fund & Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	28,225	2,933	47,067	4,535	63,511	6,782
Adj. R-sq	0.1301	0.5367	0.1264	0.5181	0.1103	0.4584

This table represents the Diff-in-Diff results for equation (2). Data from financial statements of mutual funds. The observational units are fund-investment-country-year observations. The dependent variable *Investment* is the ratio of the total market value of equity or debt investment related to a specific country to total equity or debt investment per mutual fund and year. *Reform* is a dummy variable that equals one for observations after 2017 and zero otherwise. *Treatment* is a dummy variable equals one for observations from equity mutual funds and zero otherwise. We test our hypotheses for three certain threshold in column (1) to (6). *WHTGroup0*, *WHTGroup10* and *WHTGroup15* is dummy variable equal one for countries with withholding taxes of zero, of ten percent (and lower) and 15 percent (and lower). *NAVperShare* and *NetAssetvalue* is the net asset value per share and the natural logarithm of the net asset value per mutual fund and year. *ForeignAssets* is the natural logarithm of the market value of total foreign equity or debt investment. *FundAge* is the funds' ages per year and mutual fund. *GDP*, *inflation*, *CPI* and *MarketCapitalization* is the current GDP measured in US\$, the annual inflation rate measured in %, the Corruption Perceptions Index and the market capitalization of listed domestic stocks measured as % of the GDP per year and country. *CountryRisk* is the country-specific risk rating of Moodys per country and year. *CorporateTaxRate* is the statutory tax rate per country and year. *GlobalEquityIndex* is the annual change of the S&P Global Equity Index per country and year. *StockTurnoverRatio* is the ratio of the stock turnover of domestic shares per country and year. *MSCI*, *ECBInterestRate* and *FEDInterestRate* is the relative change of the MSCI World Index at the end of each year compared to prior year, the ECB key interest rate to the end of year and the U.S. federal key interest rate at the end of each year. See Table 12 in Appendix A for further variable definitions. All specifications include fund and country fixed effects. Yearly data from 2015 to 2020. Standard errors clustered at fund level in parentheses. * Indicates significance at the 10% level, ** indicates significance at the 5% level, *** indicates significance at 1% level.

The explanatory variable of main interest is the interaction term *Reform*Treatment*. Resulting regression coefficients confirm that investments have been shifted particularly to countries offering very low tax rates for dividends. While we find a statistically significant semi-elasticity of 15.75 percent for countries with zero withholding tax rates, the coefficient for the threshold amount of ten percent is smaller, though still statistically significant. As expected, the semi-elasticity for *Reform*Treatment* for the sample of all countries with withholding taxes of 15 percent (and lower) is economically and statistical insignificant.¹⁶

To investigate in this effect more closely, we distinguish in a further step three new categories of low-tax countries in alternative specifications and perform again our diff-in-diff regression model shown in equation (2). *WHTGroup0*' includes unalterably all investment domiciles with a dividend withholding tax rate of zero. Contrary to this, *WHTGroup10*' and *WHTGroup15*' now capture all countries with a dividend tax rate of ten percent and greater than zero or 15 percent and greater ten percent. We further define *WHTGroup30*' as the group of countries with withholding tax rates greater than 15 percent. Altogether, each country in our data set now only belong to one of each of this groups. Table 15 in Appendix A presents the results of our estimation. Again, as expected, the coefficient of main interest *reform*treatment* is positive and statistically significant for *WHTGroup0*. Contrary to the results shown in table 6, the coefficient estimate of the central variable is negative as well as statistically significant for higher withholding tax thresholds. This additional estimation strongly confirms our expectation that the incentive for equity mutual funds to shift investments post reform exists, in particular, for very low withholding tax rates.

¹⁶ Again, table 14 in Appendix A presents our results of performing equation (2) separately for equity mutual funds. Altogether, our results show that German equity mutual funds, as expected, shifted investments to foreign countries with low withholding tax rates, and reduced significantly their effective tax rates in this way. More specifically, our findings suggest a stronger incentive in investing in countries the lower the respective withholding tax on dividends.

Findings reported in table 5 and 6 may suffer from bias if our difference-in-difference model captures general variations in investment trends of equity and bond mutual funds. We therefore report additional regression results in table 7 that rely on a different identification strategy. In these regressions we only consider stock investments of equity mutual funds and employ a triple difference-in-difference design. If the German Investment Tax Reform has increased the incentive of mutual funds to avoid withholding taxes, we expect also that stock investments with low dividend yields in countries with higher withholding taxes are more preferable after the change in tax law (hypothesis 3). More specifically, we investigate the change in stock investments with high dividend yields depending on the withholding tax rate applicable in the source country. Table 7 reports the results of equation (3). Our dependent variable *StockInvestment* measures the ratio of the market value of a specific stock holding to the total market value of equity at the business year-end of each equity mutual fund. Hereby, we use the plain ratio in specification (1) and the natural logarithm of it in specification (2). For purposes of a better interpretation, we multiply the calculated ratio with 100. *WHT* is the withholding tax rate on dividends in a specific country and year. If the German Investment Tax Reform has increased the incentive to avoid withholding taxes, we expect the triple interaction term *Reform*DividendYield*WHT* to be negative and statistically significant, as equity mutual funds can further reduce their tax burden in high tax countries by investing in stocks with low dividend yields. In line with this expectation, our findings show a semi-elasticity of -0.0044. Note that the coefficient estimate of the interaction term *DividendYield*WHT* is also negative and statistically significant, which indicates a negative relation between investment in stocks with high dividend yields and withholding tax rates already before the tax reform. However, the coefficient estimate of the triple interaction term *Reform*DividendYield*WHT* is about 30 times larger, which strongly confirms our hypothesis 3. Furthermore, previous studies show a negative relation between institutional investors investments and firms' dividend yield (e.g. Gompers and Metrick (2001), Bennet, Sias and Starks (2003), Grinstein and Michealy (2005)).

As our results in table 7 show a positive and statistically significant coefficient estimate for *DividendYield*, we cannot confirm this effect based on our findings.

TABLE 7: Diff-in-Diff Results Dividend Yield (Asset-level Data)

	(1) StockInvestment	(2) StockInvestment (log)
Reform	0.0386 (0.53)	0.0167 (0.33)
DividendYield	0.0000*** (4.02)	0.0000* (1.75)
WHT	-0.1471 (-0.71)	0.1314 (0.65)
Reform*DividendYield	0.0012** (2.32)	0.0009*** (2.90)
DividendYield*WHT	-0.0002*** (-4.10)	-0.0001* (-1.81)
Reform*WHT	-0.4260* (-1.94)	-0.2425* (-1.81)
Reform*DividendYield*WHT	-0.0061** (-2.45)	-0.0044*** (-2.97)
NAVperShare	0.0000*** (2.63)	0.0000*** (4.42)
NetAssetvalue	0.2313 (1.49)	0.1313*** (4.84)
ForeignAssets	-0.3460** (-2.03)	-0.2557*** (-10.09)
FundAge	0.0077 (0.38)	0.0134 (1.13)
MSCI	-3.1652** (-2.02)	-2.1291* (-1.89)
Constant	4.8084*** (4.91)	2.2906*** (2.95)
Country Controls	Yes	Yes
Fund & Country FE	Yes	Yes
Observations	48,089	48,085
Adj. R-sq	0.5435	0.5563

This table represents the triple diff-in-diff results for equation (3). Data from financial statements of equity mutual funds. The observational units are fund-asset-investment-year observations. The dependent variable *StockInvestment* the ratio of the market value of a specific stock holding to total equity investments per mutual fund and year. *Reform* is a dummy variable that equals one for observations after 2017 and zero otherwise. *DividendYield* is the dividend yield of a specific stock holding per year. *WHT* is the withholding tax rate per country and year. *NAVperShare* and *NetAssetvalue* is the net asset value per share and the natural logarithm of the net asset value per mutual fund and year. *ForeignAssets* is natural logarithm of the market value of total foreign equity or debt investment. *FundAge* is the funds' ages per year and mutual fund. Country controls included: *GDP*, *inflation*, *CPI* and *MarketCapitalization* is the current GDP measured in US\$, the annual inflation rate measured in %, the Corruption Perceptions Index and the market capitalization of listed domestic stocks measured as % of the GDP per year and country. *CountryRisk* is the country-specific risk rating of Moodys per country and year. *CorporateTaxRate* is the statutory tax rate per country and year. *GlobalEquityIndex* is the annual change of the S&P Global Equity Index per country and year. *StockTurnoverRatio* is the ratio of the stock turnover of domestic shares per country and year. *MSCI* is the relative change of the MSCI World Index at the end of each year compared to prior year per year. See Table 12 in Appendix A for further variable definitions. All specifications include fund and country fixed effects. Yearly data from 2015 to 2020. Standard errors clustered at asset level in parentheses.* Indicates significance at the 10% level, ** indicates significance at the 5% level, *** indicates significance at 1% level.

If equity mutual funds adjust their investment portfolios in accordance with new tax incentives after the reform, as predicted by hypothesis 1, hypothesis 2 and hypothesis 3, then we should also observe lower fund-level effective tax rates after the reform (hypothesis 4).

Therefore, we look further at the development of effective tax rates of the equity mutual funds in our sample. Table 8 shows our findings for the estimation of equation (4). The coefficient estimate for *Reform* is negative and statistically significant, indicating that the effective tax rate of equity funds has decreased, on average, by 3.24 percentage points after the change in tax law. This marginal effect corresponds to 27 percent of the average effective tax rate reported prior to the reform. This finding, thus, also clearly documents that fund managers made use of this newly introduced opportunity to benefit from low withholding tax rates. Altogether, our results show that German equity mutual funds, as expected, shifted investments to foreign countries with low withholding tax rates, and reduced significantly their effective tax rates in this way.

TABLE 8: Effective Tax Rate of Equity Mutual Funds (Fund-level Data)

	EffectiveTaxRate
Reform	-0.0324*** (-3.69)
NAVperShare	0.0000*** (4.24)
NetAssetvalue	0.0050 (0.34)
ExpenseRatio	-0.0011 (-0.08)
FundAge	0.0084** (2.57)
ReturnInvestment	0.0012 (0.50)
ForeignAssets	0.0109 (0.83)
MSCI	-0.2894 (-1.33)
Constant	-0.2887** (-2.29)
Fund FE	Yes
Observations	873
Adj. R-sq	0.5250

This table represents the results for equation (4). Data from financial statements of equity mutual funds. The observational units are fund-year observations. The dependent variable *EffectiveTaxRate* is the effective tax rate per mutual fund and year. *NAVperShare* and *NetAssetvalue* is the net asset value per share and the natural logarithm of the net asset value per mutual fund and year. *ExpenseRatio*, *FundAge* and *ReturnInvestment* is the funds' expense ratio, the funds' age and the growth of the mutual fund's net asset value in comparison to prior year per mutual fund and year. *ForeignAssets* is the natural logarithm of the market value of total foreign equity investment. *MSCI* is the relative change of the MSCI World Index at the end of each year compared to prior year per year. See Table 12 in Appendix A for further variable definitions. All specifications include fund fixed effects. Yearly data from 2015 to 2020. Standard errors clustered at fund level in parentheses.* Indicates significance at the 10% level, ** indicates significance at the 5% level, *** indicates significance at 1% level.

6.2. Robustness

We report several additional robustness tests in this section in order to document the validity of our findings.

Withholding tax as continuous variable Our results show that the increase in investments depends on the withholding tax rate on dividends in the investment countries. However, our results so far use a categorical classification of countries. In contrast, we report additional regression results in table 9, which include the withholding tax rate as a continuous variable. Again, we use the diff-in-diff regression design based on country-level data. We expect that equity mutual funds ($Treatment=1$) invest after the reform ($Reform=1$) more in countries with low withholding tax rates. This effect is captured by the triple interaction term $Reform * Treatment * WithholdingTaxRate$ in table 9. We use both the non-logarithmized (column (1)) and logarithmized definition of *Investment* (column (2)). As expected, we find negative and statistically significant coefficients for the triple interaction term. After the change in tax law, a ten percent point increase in withholding tax would result in a 0.3 percent point larger decrease in equity mutual funds' investments compared to debt mutual funds (column (1)). The semi-elasticity determined in column (2) amounts to -0.634.

Tax Haven Investments Low withholding tax rates coincide in many countries with other features of a tax haven location. We, thus, also need to exclude that our results are rather driven by these other features. To this end, we report additional diff-in-diff regression results that consider investments in tax haven countries, classified in accordance with alternative commonly used definitions. Hereby, we only consider countries as tax havens that do not also offer a zero withholding tax rate on dividends. As we hypothesize that, the tax-efficient structuring of mutual funds is mainly driven by the withholding tax rate, we expect no statistically significant increase of investments in these tax haven jurisdictions. The results reported in table 10 confirm this expectation. We find a statistically positive post-reform

investment effect for none of the considered tax haven definitions. This gives further support to our findings in a sense that investment effects are really driven by withholding tax rates.

Restricted observation period – year 2017: Observations in 2017 could be bias by two main reasons. First, the German Government announced the change in mutual fund taxation end of 2016. Even though, it was unclear until the end of 2017 to what extent investment funds would be affected by the new regulation, mutual funds' portfolios allocations could thereby be driven by additional incentive. Second, due to the change in tax law the fiscal year of all mutual funds was synchronized to the 31th of December 2017 for tax purposes. As the business-year-end of the major part of mutual funds is in last third of the year and thus identically to the tax fiscal year end in 2017, the portfolio choices of mutual funds in 2017 could be driven by additional incentives of efficient structuring regarding the old tax law. Therefore, we exclude observations in the year before the implementation of the new regulations. Table 11 presents our findings. Confirming our results in table 6 the coefficient for the interaction term is still positive and statistically significant for *WHTGroup0* in specification (1) and (2) and for *WHTGroup10* in specification (3).

TABLE 9: Robustness Test - Diff-in-Diff Results Low Taxed Investment (Country-level Data)

	(1)	(2)
	Investment	Investment (log)
Reform	-0.0004 (-1.04)	-0.0039 (-0.07)
Reform*Treatment	0.0023*** (4.27)	0.1659** (2.52)
WHT	-0.0422*** (-8.72)	-1.2238*** (-3.28)
Reform*WHT	0.0109*** (3.99)	0.2531 (1.46)
Treatment*WHT	0.1069*** (14.88)	2.9631*** (8.45)
Reform*Treatment*WHT	-0.0324*** (-6.23)	-0.6342** (-2.36)
NAVperShare	-0.0000 (-0.68)	0.0000*** (3.96)
NetAssetvalue	0.0014*** (2.74)	0.0033 (0.04)
ForeignAssets	-0.0020*** (-4.63)	-0.1598** (-2.12)
FundAge	-0.0000 (-0.11)	-0.0237* (-1.76)
MSCI	-0.0091 (-1.37)	-0.0912 (-0.07)
ECBInterestRate	0.0027 (1.43)	-0.0591 (-0.24)
FEDInterestRate	0.0000 (0.39)	0.0015 (0.14)
Constant	0.0331*** (5.61)	0.2536 (0.37)
Country Controls	Yes	Yes
Fund & Country FE	Yes	Yes
Observations	97,331	18,327
Adj. R-sq	0.3669	0.5244

This table represents the baseline results for equation (2) with some adjustments. Data from financial statements of mutual funds. The observational units are fund-investment-country-year observations. The dependent variable *Investment* is the ratio of the total market value of equity or debt investment related to a specific country to total equity or debt investments per mutual fund and year. *Reform* is a dummy variable that equals one for observations after 2017 and zero otherwise. *Treatment* is a dummy variable equals one for observations from equity mutual funds and zero otherwise. *WHT* is the withholding tax rate per country and year. *NAVperShare* and *NetAssetvalue* is the net asset value per share and the natural logarithm of the net asset value per mutual fund and year. *ForeignAssets* is the natural logarithm of the market value of total foreign equity investment. *FundAge* is the funds' ages per year and mutual fund. Country controls include: *GDP*, *inflation*, *CPI* and *MarketCapitalization* is the current GDP measured in US\$, the annual inflation rate measured in %, the Corruption Perceptions Index and the market capitalization of listed domestic stocks measured as % of the GDP per year and country. *CountryRisk* is the country-specific risk rating of Moodys per country and year. *CorporateTaxRate* is the statutory tax rate per country and year. *GlobalEquityIndex* is the annual change of the S&P Global Equity Index per country and year. *StockTurnoverRatio* is the ratio of the stock turnover of domestic shares per country and year. *MSCI*, *ECBInterestRate* and *FEDInterestRate* is the relative change of the MSCI World Index at the end of each year compared to prior year, the ECB key interest rate to the end of year and the U.S. federal key interest rate at the end of each year. See Table 12 in Appendix A for further variable definitions. All specifications include fund and country fixed effects. Yearly data from 2015 to 2020. Standard errors clustered at fund level in parentheses. * Indicates significance at the 10% level, ** indicates significance at the 5% level, *** indicates significance at 1% level.

TABLE 10: Robustness Test - Diff-in-Diff Results Tax Haven Investment (Country-level Data)

	(1)	(2)	(3)	(4)
	TaxHavenInvestment (Hines&Rice)	TaxHavenInvestment (Hines&Rice, Big 7)	TaxHavenInvestment (Johannesen & Zucman)	TaxHavenInvestment (OECD Tax Haven List, 2000)
Reform	-2.1780 (-1.50)	0.0128*** (4.66)	0.0013 (0.37)	0.0000 (0.00)
Reform*Treatment	0.0116 (1.64)	-0.0246*** (-9.19)	-0.0052** (-2.38)	-0.0072** (-2.04)
NAVperShare	-0.0000*** (-3.01)	-0.0000 (-0.46)	-0.0000*** (-3.82)	-0.0000*** (-3.33)
NetAssetvalue	-0.0078 (-1.21)	-0.0016 (-0.96)	-0.0016 (-0.61)	-0.0037 (-0.99)
ForeignAssets	-0.0005 (-0.07)	0.0005 (0.28)	-0.0006 (-0.21)	-0.0010 (-0.25)
FundAge	-0.2131 (-1.48)	0.0003 (0.46)	0.0010 (0.67)	0.0006 (0.15)
MSCI			0.0702 (0.87)	0.0582 (0.32)
ECBInterestRate			0.0185 (0.87)	0.0135 (0.31)
FEDInterestRate			0.0003 (0.26)	
Constant	48.6349 (1.50)	0.0741 (0.88)	0.0643 (0.80)	0.0965 (0.60)
Country Controls	Yes	Yes	Yes	Yes
Fund & Country FE	Yes	Yes	Yes	Yes
Observations	3,335	3,335	8,508	5,555
Adj. R-sq	0.4553	0.6542	0.1652	0.2378

This table represents the Diff-in-Diff results for equation (2) with adjustments. Data from financial statements of mutual funds. The observational units are fund-investment-country-year observations. *TaxHavenInvestment* is the ratio of market value of equity or debt investment to total equity and debt investment in tax haven countries per mutual fund and year. We test our hypotheses for different tax haven lists of previous literature. The tax haven classification in column (1) refers to Hince&Rice (1994), in column (2) to the Big 7 of Hince&Rice (1994), in column (3) to Johannesen&Zucman (2014) and in column (4) to OCED Tax Haven List (2000). *Reform* is a dummy variable that equals one for observations after 2017 and zero otherwise. *Treatment* is a dummy variable equals one for observations from equity mutual funds and zero otherwise. *NAVperShare* and *NetAssetvalue* is the net asset value per share and the natural logarithm of the net asset value per mutual fund and year. *ForeignAssets* is the natural logarithm of the market value of total foreign equity investment. *FundAge* is the funds' ages per year and mutual fund. Country controls include: *GDP*, *inflation*, *CPI* and *MarketCapitalization* is the current GPD measured in US\$, the annual inflation rate measured in %, the Corruption Perceptions Index and the market capitalization of listed domestic stocks measured as % of the GDP per year and country. *CountryRisk* is the country-specific risk rating of Moodys per country and year. *CorporateTaxRate* is the statutory tax rate per country and year. *GlobalEquityIndex* is the annual change of the S&P Global Equity Index per country and year. *StockTurnoverRatio* is the ratio of the stock turnover of domestic shares per country and year. *MSCI*, *ECBInterestRate* and *FEDInterestRate* is the relative change of the MSCI World Index at the end of each year compared to prior year, the ECB key interest rate to the end of year and the U.S. federal key interest rate at the end of each year. See Table 12 in Appendix A for further variable definitions. All specifications include fund and country fixed effects. Yearly data from 2015 to 2020. Standard errors clustered at fund level in parentheses.* Indicates significance at the 10% level, ** indicates significance at the 5% level, *** indicates significance at 1% level.

TABLE 11: Robustness Test - Diff-in-Diff Results Restricted Observation Period (Country-level Data)

	(1)	(2)	(3)	(4)	(5)	(6)
	WHTGroup0		WHTGroup10		WHTGroup15	
	Investment	Investment (log)	Investment	Investment (log)	Investment	Investment (log)
Reform	-0.0004 (-0.75)	-0.2497 (-1.55)	-0.0003 (-0.84)	-0.1085 (-1.02)	0.0002 (0.52)	0.0163 (0.22)
Reform*Treatment	0.0014*** (3.16)	0.2017** (2.29)	0.0007** (2.32)	0.1418 (1.65)	-0.0001 (-0.18)	0.0512 (0.65)
NAVperShare	0.0000*** (8.23)	-0.0000 (-0.90)	0.0000*** (4.74)	0.0000** (2.31)	0.0000 (1.00)	0.0000** (2.49)
NetAssetvalue	-0.0007* (-1.96)	-0.0754 (-0.31)	-0.0007*** (-2.60)	-0.3897 (-1.43)	-0.0004 (-0.82)	-0.0851 (-0.40)
ForeignAssets	0.0004 (1.49)	-0.1840 (-0.76)	0.0005** (2.44)	0.1282 (0.45)	-0.0001 (-0.16)	-0.1842 (-0.82)
FundAge	0.0000 (0.16)	0.0986 (1.39)	0.0000 (0.32)	0.0198 (0.40)	0.0001 (0.77)	-0.0006 (-0.02)
MSCI	-0.0073 (-0.58)	1.5722 (0.60)	-0.0143 (-1.64)	-3.9400 (-1.62)	-0.0023 (-0.28)	-1.0326 (-0.44)
ECBInterestRate	0.0000 (0.00)	1.2386 (1.23)	-0.0003 (-0.08)	-0.3451 (-0.45)	0.0036 (0.87)	0.1276 (0.19)
Constant	0.0083 (1.17)	0.3644 (0.23)	0.0034 (0.71)	0.6457 (0.53)	0.0098** (1.97)	1.2887 (1.18)
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund & Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,203	2,293	39,441	3,657	53,095	5,542
Adj. R-sq	0.1304	0.5243	0.1279	0.5104	0.1109	0.4476

This table represents the Diff-in-Diff results for equation (2) with some adjustments. Data from financial statements of mutual funds. The observational units are fund-investment-country-year observations. The dependent variable *Investment* is the ratio of the total market value of equity or debt investment related to a specific country to total equity or debt investment per mutual fund and year. *Reform* is a dummy variable that equals one for observations after 2017 and zero otherwise. *Treatment* is a dummy variable equals one for observations from equity mutual funds and zero otherwise. We test our hypotheses for three certain threshold in column (1) to (6). *WHTGroup0*, *WHTGroup10* and *WHTGroup15* is dummy variable equal one for countries with withholding of zero, of ten percent (and lower) and 15 percent (and lower). *NAVperShare* and *NetAssetvalue* is the net asset value per share and the natural logarithm of the net asset value per mutual fund and year. *ForeignAssets* is the natural logarithm of the market value of total foreign equity investment. *FundAge* is the funds' ages per year and mutual fund. Country controls included: *GDP*, *inflation*, *CPI* and *MarketCapitalization* is the current GDP measured in US\$, the annual inflation rate measured in %, the Corruption Perceptions Index and the market capitalization of listed domestic stocks measured as % of the GDP per year and country. *CountryRisk* is the country-specific risk rating of Moodys per country and year. *CorporateTaxRate* is the statutory tax rate per country and year. *GlobalEquityIndex* is the annual change of the S&P Global Equity Index per country and year. *StockTurnoverRatio* is the ratio of the stock turnover of domestic shares per country and year. *MSCI* and *ECBInterestRate* is the relative change of the MSCI World Index at the end of each year compared to prior year and the ECB key interest rate to the end of year. See Table 12 in Appendix A for further variable definitions. All specifications include fund and country fixed effects. Yearly data from 2015 to 2020. Standard errors clustered at fund level in parentheses. * Indicates significance at the 10% level, ** indicates significance at the 5% level, *** indicates significance at 1% level.

7. Conclusion

We analyse in this paper the impact of the German Investment Reform 2018 on the investment decisions of mutual funds. As the new regulations restricts the possibility for crediting foreign withholding taxes, we assume that German equity mutual funds now have an incentive to invest in countries with low withholding tax rates on dividends. We use different fixed effects and diff-in-diff designs for the purposes of identification. Our results clearly document that German equity mutual funds, in fact, have shifted investments to foreign countries, in particular those with low withholding tax rates, after the reform. Hereby, the share of investments in countries with zero withholding tax rates increased by 2.1 percentage points after the reform, whereas a 1.9 percentage increase was observed for countries with withholding tax rates of up to ten percentage points. No similar effect was observed for countries with higher withholding tax rates. These findings hold to a number of different specifications and robustness tests.

Our results have at least two important policy implications. First, we clearly document that fund managers consider withholding taxes in the composition of fund portfolios, at least if withholding taxes cannot be credited at fund or investor level. Higher withholding tax rates may, thus, be associated with smaller investment inflows. Second, our results document the effects associated with a non-transparent fund tax regime in high-tax countries. Since funds can now reduce their tax burden by shifting investments to countries with low tax rates, we observe an outward shifting of investment as a response to this reform. Furthermore, the change in tax law could have economic implications. From a theoretically point of view, the tax efficient structuring of mutual funds after the change in tax law may lead to smaller pre-tax performance or higher risk taking since fund manager focus more on avoiding withholding taxes. Therefore, further analysis of the economic implications of tax planning after the change in tax law on the performance of mutual funds is an interesting venue for future research.

References

- Akomeah, M., Kong, Y., Antwi, H. (2018). Effect of Tax-Deferred Assets on Mutual Fund Strategies of the Mutual Funds, *European Journal of Contemporary Research*, 7(1):121-128.
- Alstadsæter, A., Jacob, M., Michaely, R. (2017). Do Dividend Taxes Affect Corporate Investment?, *Journal of Public Economics*, 151:74-82.
- Amiram, D., Frank, M. M. (2016). Foreign Portfolio Investment and Shareholder Dividend Taxes, *Accounting Review*, 91(3):717-740.
- Ammer, J., Holland, S. B., Smith, D. C., Warnock, F. E. (2012). U.S. International Equity Investment, *Journal of Accounting Research*, 50(5):1109-1139.
- Arnott, R., Kalesnik, V., Schuesler, T. (2018). Is Your Alpha Big Enough To Cover Its Taxes? A Quarter-Century Retrospective, *Journal of Portfolio Management*, 44(5):78-102.
- Barclay, M., Pearson, N., Weisbach, M (1998). Open-end Mutual Funds and Capital-gains Taxes, *Journal of Financial Economics*, 49(1):3-43.
- Becker, B., Jacob, M., Jacob, M. (2013). Payout Taxes and the Allocation of Investment. *Journal of Financial Economics*, 107(1), 1-24.
- Bennett, J., Sias, R., Starks, L. (2003). Greener Pastures and the Impact of Dynamic Institutional Preferences, *The Review of Financial Studies*, 16(4):1203-1238.
- Bekaert, G., Wang, S. W. (2009). Home Bias Revisited, SSRN Working Paper.
- Bergstresser, D., Pontiff, J. (2013). Investment Taxation and Portfolio Performance, *Journal of Public Economics*, 97:245-257.
- Bergstresser, D., Poterba, J. (2002). Do After-tax Returns Affect Mutual Fund Inflows?, *Journal of Financial Economics*, 63(3):381-414.
- Bhabra, H., Dhillon, U., Ramirez, G. (1999). A November Effect? Revisiting the Tax-Loss-Selling Hypothesis, *Financial Management*, 28(4):5-15.
- Brav, A., Graham, J., Harvey, C., Michealy, R. (2005): Payout Policy in the 21st Century, *Journal of Financial Economics*, 27(3):485-527.
- Buettner, T., Ruf, M. (2007). Tax Incentives and Location of FDI: Evidence from a Panel of German multinationals, *International Tax and Public Finance*, 14:151-164.
- Bundesverband für Investmentvermögen (2022), Deutschland ist größter Fondsmarkt der EU, available at: <https://www.bvi.de/ueber-die-branche/deutschland-groesster-fondsmarkt-der-eu/>.

- Chan, K., Covrig, V., Ng, L. (2005). What Determines the Domestic Bias and Foreign Bias? Evidence from Mutual Fund Equity Allocations Worldwide. *The Journal of Finance*, 60 (3):1495–1534.
- Chetty, R., Saez, E., (2005). Dividend Taxes and Corporate Behavior: Evidence from the 2003 Dividend Tax Cut, *The Quarterly Journal of Economics*, (120)3:791–833.
- Chetty, R., Saez, E. (2010). Dividend and Corporate Taxation in an Agency Model of the Firm, *American Economic Journal: Economic Policy*, 2(3):1-31.
- Coval, J., Moskowitz, T. (1999). Home Bias at Home: Local Equity Preference in Domestic Portfolios, *The Journal of Finance*, (54)6:2045-2073.
- De Mooij, R., Ederveen, S., (2003). Taxation and Foreign Direct Investment: A Synthesis of Empirical Research, *International Tax and Public Finance*, 10, 673–693.
- Del Guercio, D., (1996). The Distorting Effect of the Prudent-man Laws on Institutional Equity Investments, *Journal of Financial Economics*, 40:31–62.
- Desai, M. A., Dharmapala, D. (2011). Dividend Taxes and International Portfolio Choice, *Review of Economics and Statistics*, 93(1):266–284.
- Deutsche Bundesbank (2022), Investmentfondsstatistik.
- Devereux, M., Griffith, R. (1998). The Taxation of discrete Investment Choice, IFS Working Papers No. W98/16.
- Dickson, J. M., Shoven, J. B., (1995). Taxation and Mutual Funds: An Investor Perspective, *Tax Policy and the Economy*, 9:151–180.
- Dickson, J., John B. S., Sialm, C., (2000). Tax Externalities of Equity Mutual Funds, *National Tax Journal*, 53:607–628.
- Dimmock, S., Gerken, W. C., Ivković, Z., Weisbenner, S. J. (2018). Capital Gains Lock-in and Governance Choices, *Journal of Financial Economics*, 127(1):113-135.
- Doellman, T., Huseynov, F., Nasser, T., Sardarli, S. (2020). Corporate Tax Avoidance and Mutual Fund Ownership, *Accounting and Business Research*, 50(6):608-635.
- Drake, K.D., Lusch, S.J., Stekelberg, J. (2019). Does Tax Risk Affect Investor Valuation of Tax Avoidance?, *Journal of Accounting, Auditing & Finance*, 34:151-176.
- EFAMA (2022a), Worldwide Regulated Open-ended Fund Assets and Flows, Trends in the Fourth Quarter of 2021.
- EFAMA (2022b), Trends in the European Investment Fund Industry in the Fourth Quarter of 2021.
- Egger, P., Loretz, S., Pfaffermayr, M., Winner, H. (2006). Corporate Taxation and Multinational Activity, SSRN Working Paper.

- Feld, L., Heckemeyer, J. H. (2011). FDI and Taxation: A Meta-Study, *Journal of Economics surveys*, 25(2):233-272.
- Fong, K.Y. L., Gallagher D. R., Lau, S. S. W., Swan, P. L. (2009). Do Active Fund Managers Care About Capital Gains Tax Efficiency?, *Pacific-Basin Finance Journal*, 17(2):257-270.
- French, K., Poterba, J., (1991). Investor Diversification and International Equity Markets, Working Paper.
- Gibson, S., Safieddine, A., Titman, S. (2000). Tax-motivated Trading and Price Pressure: An analysis of mutual fund holdings, *Journal of Financial and Quantitative Analysis*, 35:369–386.
- Giroud, X., Rauh, J., (2019). State Taxation and the Reallocation of Business Activity: Evidence from Establishment-Level Data, *Journal of Political Economy*, 127(3):1262-1316.
- Gompers, P., Metrick, A. (2001). Institutional Investors and Equity Prices, *The Quarterly Journal of Economics*, 116(1):229-259.
- Grinstein, Y., Michaely, R., (2005). Institutional Holdings and Payout Policy, *Journal of Finance*, 60(3):1389-1426.
- Haberly, D., Wójcik, D. (2014). Tax Haven and the Production of Offshore FDI: an Empirical Analysis, *Journal of Economic Geography*, 15(1):75-101.
- Hanlon, M., Heitzman, S. M. (2010). A Review of Tax Research, *Journal of Accounting and Economics*, 50(2-3):127-178.
- Hau, H., Rey, H. (2008). Home Bias at the Fund Level, Working Paper.
- Huddart, S., Narayanan, V. G. (2002). An Empirical Examination of Tax Factors and Mutual Funds' stock Sales Decisions, *Review of Accounting Studies*, 7:319–341.
- Ivković, Z., Poterba, J., Weisbenner, S. (2005). Tax-motivated Trading by Individual Investors, *American Economic Review*, 95(5):1605–1630.
- Jacob, M., Schütt, H. (2019). Firm Valuation and the Uncertainty of Future Tax Avoidance, *European Accounting Review*, 29(3):409-435.
- Jacob, M. (2021). Dividend Taxes, Employment, and Firm Productivity, *Journal of Corporate Finance*, 69, Article 102040.
- Jacob, M. (2022). Real Effects of Corporate Taxation: A Review, *European Accounting Review*, 31:269-296.
- Jacob, M., Todtenhaupt, M. (2022). Withholding Taxes, Compliance Cost and Foreign Portfolio Investment, SSRN Working Paper.

- Jeffrey, R., Arnott, R. (1993): Is your Alpha Big Enough to Cover its Taxes?, *Journal of Portfolio Management*, 19(3):15-25.
- Lejour, A. (2014). The Foreign Investment Effects of Tax Treaties, Working Paper, Oxford University Centre of Business Taxation.
- Maier, M., Scholz, H. (2019). Determinations of Home Bias: Evidence form European Equity Funds, Working Paper.
- Mishra, A. (2014). Australia's Home Bias and Cross Border Taxation, *Global Finance Journal*, 25(2):108-123.
- Moussawi, R., Shen, K., Velthuis, R. (2020). ETF Heartbeat Trades, Tax Efficiencies, and Clienteles: The Role of Taxes in the Flow Migration from Active Mutual Funds to ETFs, SSRN Working Paper.
- OECD (2019), Owner of the World's Listed Companies.
- Patel, E., Seegert, N., Smith, M. (2017). At a Loss: The Real and Reporting Elasticity of Corporate Taxable Income, SSRN Working Paper.
- Razin, A., Rubinstein, Y., Sadka, E. (2005). Corporate Taxation and Bilateral FDI with Threshold Barriers, NBER Working Paper No. 11196.
- Riedle, M. (2016). Withholding Tax Effects on the Investment Decision of Multinational Firms, SSRN Working paper.
- Sialm, C., Zhang, H. (2020). Tax-Efficient Asset Management: Evidence from Equity Mutual Funds, *Journal of Finance*, 75(2):735-777.
- Sialm, C., Starks, L. (2012). Mutual Fund Tax Clienteles, *Journal of Finance*, 67:1397-1422.
- Stiglitz, J. E. (1983). Some Aspects of the Taxation of Capital Gains, *Journal of Public Economics*, (21)2:257-294.

Appendix A

TABLE 12: Definition of Variables

Variables	Definition
CorporateTaxRate	Country-specific statutory corporate tax rate.
CountryRisk	Country-specific risk rating of Moody's.
CPI	Country-specific Corruption Perceptions Index.
DebtRatio	Ratio of the debt investments to total assets, calculated as the total value of bond investment divided by total net asset value.
DividendYield	Dividend yield, calculated as the accumulated dividend payment per year divided by the average annual stock per year.
ECBInterestRate	ECB key interest rate at year end.
EffectiveTaxRate	Effective tax rate, calculated as foreign withholding taxes paid divided by total foreign income (dividend and interest income).
EquityRatio	Ratio of the equity investments to total assets, calculated as the total value of stock investment divided by total net asset value.
ExpenseRatio	Mutual funds' total expense ratio.
FEDInterestRate	Unweighted average spread of the U.S. federal key interest rate at year end.
ForeignAssets	Natural logarithm of the accumulated value of total foreign stock/bond holdings.
ForeignInvestment	Ratio of investment in foreign assets, calculated as the total market value of foreign stock/bond investments, divided by the accumulated value of total stock/bond holdings.
FundAge	Mutual funds' age
GDP	Country-specific current GPD measured in US\$.
GlobalEquityIndex	Annual change of the country-specific S&P Global Equity Index.
HistoricalBeta	Mutual fund's historical beta from Thomson Reuters Data.
HistoricalVolatility	Mutual fund's historical Volatility from Thomson Reuters Data.

Inflation	Country-specific annual inflation rate, measured by the consumer price index in percentage.
Investment	Ratio of investment per country, calculated as the total market value of stock/bond investment per country divided by the accumulated value of total stock/bond holdings.
LowTaxInvestment	Ratio of investment in countries offering a low withholding tax, calculated as the total market value of stock/bond investment in countries with low withholding taxes divided by the accumulated value of total stock/bond holdings.
MarketCapitalization	Country-specific market capitalization of listed domestic stocks measured as percentage of the GDP per year.
MSCI	MSCI World Index, calculated as the relative change in MSCI World Index at year end compared to prior year.
NAVperShare	Net asset value per share, calculated as the mutual fund's net asset value divided by the total outstanding shares.
NetAssetvalue	Natural Logarithm of mutual fund's net asset value.
PayoutRatio	Dividend payout ratio, calculated as dividends of the mutual fund paid to the investors divided by total ordinary income.
Reform	Dummy variable, taking the value of one for observations after 2017, zero otherwise.
ReturnInvestment	Percentage change in mutual fund's net asset value compared to prior year.
StocksTurnoverRatio	Country-specific ratio of stock turnover of domestic shares.
TaxHavenInvestment	Ratio of investment in tax haven countries that do not also offer a zero withholding tax rate, calculated as the total market value of stock/bond investments in tax haven with no zero withholding tax rate divided by the accumulated value of total stock/bond holdings.
Treatment	Dummy variable, taking the value of one for observations of equity mutual funds, zero otherwise.

WHTGroup0	Dummy variable, taking the value of one for observations of countries with withholding tax rates equal zero percent, zero otherwise.
WHTGroup10	Dummy variable, taking the value of one for observations of countries with withholding tax rates equal ten percent (and lower), zero otherwise.
WHTGroup15	Dummy variable, taking the value of one for observations of countries with withholding tax rates equal 15 percent (and lower), zero otherwise.
WHTGroup10 [*]	Dummy variable, taking the value of one for observations of countries with withholding tax rates equal ten percent (and greater zero percent), zero otherwise.
WHTGroup15 [*]	Dummy variable, taking the value of one for observations of countries with withholding tax rates equal 15 percent (and greater ten percent), zero otherwise.
WHTGroup30 [*]	Dummy variable, taking the value of one for observations of countries with withholding tax rates greater 15 percent, zero otherwise.
WHT	Country-specific withholding tax rate on dividend income.

TABLE 13: Results Equity Mutual Funds Low Tax Investment (Fund-level Data)

	(1)	(2)	(3)	(4)	(5)
	Foreign Investment	Foreign Investment (log)	Investment WHTGroup0	Investment WHTGroup0	Investment WHTGroup0
Reform	0.0370** (2.08)	0.0499** (1.99)	0.0210*** (3.12)	0.0193*** (3.00)	0.0075 (0.95)
NAVperShare	-0.0000*** (-2.73)	-0.0000*** (-3.46)	-0.0000 (-1.12)	-0.0000* (-1.96)	-0.0000 (-1.36)
NetAssetvalue	-0.0046 (-0.29)	-0.0129 (-0.54)	-0.0620 (-1.63)	-0.0615 (-1.61)	-0.0636 (-1.64)
ExpenseRatio	-0.1323 (-1.47)	0.0321 (0.31)	0.0071 (0.43)	0.0019 (0.11)	0.0139 (0.66)
FundAge	0.0007 (0.10)	0.0073 (0.89)	-0.0100*** (-3.96)	-0.0088*** (-3.57)	-0.0036 (-1.20)
ReturnInvestment	-0.0138 (-1.09)	0.0012 (0.15)	-0.0013 (-0.32)	-0.0016 (-0.42)	-0.0004 (-0.12)
ForeignAssets			0.0352 (1.53)	0.0363 (1.56)	0.0416* (1.69)
MSCI	0.6324* (1.69)	0.7181 (1.34)	0.5149*** (3.13)	0.4522*** (2.77)	0.4432** (2.25)
Constant	0.9771*** (2.65)	-0.3640 (-0.78)	0.7632** (2.17)	0.7378** (2.09)	0.6294* (1.80)
Fund FE	Yes	Yes	Yes	Yes	Yes
Observations	903	873	873	873	873
Adj. R-sq	0.8558	0.9192	0.7993	0.8807	0.8782

This table represents the results for equation (1) separately for equity funds. Data from financial statements of equity mutual funds. The observational units are fund-year observations. The dependent variable *ForeignInvestment* is the ratio of the market value of total foreign equity investment to total equity investment per mutual fund and year. The dependent variable *LowTaxInvestment* in column (3) to (5) is the ratio of total market value of equity investment in countries with withholding tax rates equal to or below a certain threshold to total equity investment per mutual fund and year. The threshold amounts to zero percent in column (3), ten percent in column (4) and 15 percent in column (5). *Reform* is a dummy variable that equals one for observations after 2017 and zero otherwise. *NAVperShare* and *NetAssetvalue* is the net asset value per share and the natural logarithm of the net asset value per mutual fund and year. *ExpenseRatio*, *FundAge* and *ReturnInvestment* is the funds' expense ratio, the funds' age and the growth of the mutual fund's net asset value in comparison to prior year per mutual fund and year. *ForeignAssets* is natural logarithm of the market value of total foreign equity investment. *MSCI* is the relative change of the MSCI World Index at the end of each year compared to prior year and. See Table 12 in Appendix A for further variable definitions. All specifications include fund fixed effects. Yearly data from 2015 to 2020. Standard errors clustered at fund level in parentheses.* Indicates significance at the 10% level, ** indicates significance at the 5% level, *** indicates significance at 1% level

TABLE 14: Results Equity Mutual Funds Low Tax Investment (Country-level Data)

	(1)	(2)	(3)	(4)	(5)	(6)
	Investment WHTGroup0	Investment WHTGroup10	Investment WHTGroup15	Investment WHTGroup10'	Investment WHTGroup15'	Investment WHTGroup30'
Reform	-0.0005 (-1.32)	-0.0005 (-1.33)	-0.0009* (-1.83)	-0.0002 (-0.53)	-0.0003 (-0.83)	0.0004 (0.83)
WHT		-0.0001 (-0.12)	-0.0007 (-1.10)	0.0003 (0.69)	-0.0005 (-1.20)	0.0007 (1.10)
Reform*WHT	0.0009*** (3.26)	0.0009** (2.20)	0.0013* (1.89)	0.0002 (0.59)	0.0007 (0.97)	-0.0013* (-1.89)
NAVperShare	-0.0000 (-1.62)	-0.0000 (-1.63)	-0.0000 (-1.62)	-0.0000 (-1.63)	-0.0000 (-1.63)	-0.0000 (-1.62)
NetAssetvalue	0.0008 (1.01)	0.0008 (1.02)	0.0008 (1.01)	0.0008 (1.03)	0.0008 (1.03)	0.0008 (1.01)
ForeignAssets	-0.0017** (-2.43)	-0.0017** (-2.44)	-0.0017** (-2.43)	-0.0017** (-2.44)	-0.0017** (-2.44)	-0.0017** (-2.43)
FundAge	-0.0001 (-0.83)	-0.0002 (-0.98)	-0.0001 (-0.91)	-0.0001 (-0.93)	-0.0001 (-0.84)	-0.0001 (-0.91)
MSCI	-0.0200** (-1.97)	-0.0189* (-1.90)	-0.0213** (-2.04)	-0.0198** (-1.99)	-0.0216* (-1.97)	-0.0213** (-2.04)
Constant	0.0518*** (5.27)	0.0528*** (5.36)	0.0537*** (5.33)	0.0522*** (5.32)	0.0520*** (5.28)	0.0529*** (5.35)
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund & Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	40,209	40,209	40,209	40,209	40,209	40,209
Adj. R-sq	0.4216	0.4216	0.4216	0.4216	0.4216	0.4216

This table represents the results for equation (2) separately for equity funds. Data from financial statements of equity mutual funds. The observational units are fund-investment-country-year observations. The dependent variable *Investment* is the ratio of the total market value of equity related to a specific country to total equity investment per mutual fund and year. *Reform* is a dummy variable that equals one for observations after 2017 and zero otherwise. *WHT* equals one for withholding tax rates equal or below a certain threshold and zero otherwise. We test our hypotheses for three certain threshold in column (1) to (6) as shown in the specific column. *ForeignAssets* is the natural logarithm of the market value of total foreign equity investment. *NAVperShare* and *NetAssetvalue* is the net asset value per share and the natural logarithm of the net asset value per mutual fund and year. *FundAge* is the funds' ages per year and mutual fund. Country controls include: *GDP*, *inflation*, *CPI* and *MarketCapitalization* is the current GDP measured in US\$, the annual inflation rate measured in %, the Corruption Perceptions Index and the market capitalization of listed domestic stocks measured as % of the GDP per year and country. *CountryRisk* is the country-specific risk rating of Moodys per country and year. *CorporateTaxRate* is the statutory tax rate per country and year. *GlobalEquityIndex* is the annual change of the S&P Global Equity Index per country and year. *StockTurnoverRatio* is the ratio of the stock turnover of domestic shares per country and year. *MSCI* is the relative change of the MSCI World Index at the end of each year compared to prior year per year. See Table 12 in Appendix A for further variable definitions. All specifications include fund and country fixed effects. Yearly data from 2015 to 2020. Standard errors clustered at fund level in parentheses.* Indicates significance at the 10% level, ** indicates significance at the 5% level, *** indicates significance at 1% level.

TABLE 15: Diff-in-Diff Results Low Taxed Investment for Additional WHT Groups (Country-level Data)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	WHTGroup0		WHTGroup10'		WHTGroup15'		WHTGroup30'	
	Investment	Investment (log)	Investment	Investment (log)	Investment	Investment(log)	Investment	Investment(log)
Reform	-0.0007 (-1.18)	0.0016 (0.02)	-0.0006** (-2.07)	-0.2920** (-1.99)	0.0016* (1.69)	0.1599 (0.97)	0.0028*** (3.22)	0.0506 (1.05)
Reform*Treatment	0.0014*** (3.63)	0.1575** (2.22)	-0.0004* (-1.86)	-0.0207 (-0.13)	-0.0025*** (-2.74)	-0.2932** (-2.54)	-0.0066*** (-6.76)	0.0002 (0.01)
NAVperShare	0.0000*** (5.78)	-0.0000 (-0.87)	-0.0000*** (-9.09)	-0.0000*** (-6.53)	-0.0000*** (-3.32)	-0.0000** (-2.42)	-0.0000 (-0.58)	0.0000*** (4.62)
NetAssetvalue	-0.0007* (-1.80)	-0.1269 (-0.49)	-0.0004** (-2.32)	-0.7409*** (-2.94)	-0.0014 (-1.02)	-0.0699 (-0.35)	0.0052*** (3.68)	0.0708 (1.20)
ForeignAssets	0.0003 (1.20)	-0.1405 (-0.54)	0.0005** (2.51)	0.4626* (1.77)	0.0003 (0.25)	-0.1975 (-0.96)	-0.0062*** (-5.25)	-0.1629*** (-2.87)
FundAge	0.0002 (1.36)	0.0054 (0.13)	0.0004*** (4.00)	0.1030** (2.49)	-0.0000 (-0.08)	-0.0365 (-0.77)	-0.0005 (-1.52)	-0.0411*** (-2.62)
MSCI	-0.0093 (-1.42)	-2.0136 (-0.81)	-0.0014 (-0.20)	-4.2988 (-1.27)	0.0238 (1.52)	-0.1809 (-0.04)	0.0105 (0.43)	0.1277 (0.07)
ECBInterestRate	0.0024 (0.93)	-0.1405 (-0.27)	0.0040* (1.79)	0.1720 (0.26)	0.0033 (0.73)	0.5799 (0.56)	-0.0062 (-1.20)	-0.5231* (-1.85)
FEDInterestRate	-0.0000 (-0.13)	-0.0480 (-1.50)	0.0001* (1.66)	0.0621 (1.62)	0.0000 (0.17)	0.0101 (0.31)	0.0004 (1.31)	0.0176 (1.22)
Constant	0.0081 (0.96)	2.1086 (1.57)	-0.0043 (-1.49)	-1.2118 (-0.81)	0.0455** (2.00)	3.7340* (1.78)	0.1211*** (4.77)	0.6732 (0.60)
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund & Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	28,225	2,933	18,842	1,566	16,444	2,207	33,820	11,526
Adj. R-sq	0.1301	0.5367	0.1882	0.5750	0.1495	0.4975	0.3659	0.5345

This table represents the Diff-in-Diff results for equation (2) with adjustments. Data from financial statements of mutual funds. The observational units are fund-investment-country-year observations. The dependent variable *Investment* is the ratio of the total market value of equity or debt investment related to a specific country to total equity or debt investments per mutual fund and year. *Reform* is a dummy variable that equals one for observations after 2017 and zero otherwise. *Treatment* is a dummy variable equals one for observations from equity mutual funds and zero otherwise. *WHT* equals one for withholding tax rates equal or below a certain threshold and zero otherwise. We test our hypotheses for three certain threshold in column (1) to (8). *WHTGroup0*, *WHTGroup10'*, *WHTGroup15'* and *WHTGroup30'* is dummy variable equal one for countries with withholding of zero, of ten percent (and greater zero percent), 15 percent (and greater ten percent) and greater 15 percent. *NAVperShare* and *NetAssetvalue* is the net asset value per share and the net asset value per mutual fund and year. *ForeignAssets* is natural logarithm of the the market value of total foreign equity or debt investment. *FundAge* is the funds' ages per year and mutual fund. Country controls include: *GDP*, *inflation*, *CPI* and *MarketCapitalization* is the current GDP measured in US\$, the annual inflation rate measured in %, the Corruption Perceptions Index and the market capitalization of listed domestic stocks measured as % of the GDP per year and country. *CountryRisk* is the country-specific risk rating of Moodys per country and year. *CorporateTaxRate* is the statutory tax rate per country and year. *GlobalEquityIndex* is the annual change of the S&P Global Equity Index per country and year. *StockTurnoverRatio* is the ratio of the stock turnover of domestic shares per country and year. *MSCI*, *ECBInterestRate* and *FEDInterestRate* is the relative change of the MSCI World Index at the end of each year compared to prior year, the ECB key interest rate to the end of year and the U.S. federal key interest rate at the end of each year. See Table 12 in Appendix A for further variable definitions. All specifications include fund and country fixed effects. Yearly data from 2015 to 2020. Standard errors clustered at fund level in parentheses.* Indicates significance at the 10% level, ** indicates significance at the 5% level, *** indicates significance at 1% level.