

Market reactions of multinationals to the OECD BEPS Action Plan

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ABSTRACT

This paper investigates the overall equity market reactions to the publication of the OECD BEPS Action Plan. We investigate abnormal stock returns for firms incorporated and traded on the stock market in the 36 OECD member states for various event dates during the developmental phase of the OECD BEPS Action Plan. Overall, we find a negative market reaction across the relevant events, which suggests that the additional tax costs from limiting the possibilities for aggressive tax planning practices outweigh the benefits (such as more transparency, better international tax dispute resolution, etc) related to the introduction of the OECD BEPS Action Plan. The conclusion of the Multilateral Instrument (MLI) results in the most negative cumulative reaction. The USA show a significant negative mean return across all events, but we find inconclusive evidence for market reactions across the European Union (EU). We find that more tax avoiding firms have stronger negative reactions to the events than less tax avoiding firms. We provide first evidence as to how investors reacted to the introduction of the OECD BEPS Action Plan and contribute to the literature by further investigating the association between tax avoidance and stock return. We thus provide information for decision-makers, states and investors regarding future tax regulatory changes and their effects on the capital market.

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I. Introduction

Starting in 2010-2011, media reports have drawn attention to the fact that some highly profitable multinational companies seem to pay almost no corporate income tax in the source country, ie. the country in which the income is assumed to be earned. The effective tax rates on foreign profits of Apple Inc. and Google Inc., for example, have been reported to be 3% and 1%, respectively (Dharmapala, 2014). The fact that some multinationals are able to drastically reduce their tax liability by exploiting flaws and loopholes in existing tax rules suggests that the taxation of multinational firms is in need of reform (Fuest *et al.*, 2013) which is reflected in the intense public debate surrounding profit shifting and tax avoidance by multinational firms. Given that many countries face high levels of public debt and strong pressure to generate tax revenue, it is not surprising that this debate has brought the taxation of multinational firms to the top of the international policy agenda.

The G 20 leaders stressed the need to take action against multinational profit shifting and tax avoidance at the G 20 summit in Los Cabos in 2012 (G 20, 2012). On July 19 2013, the OECD published a global action plan (BEPS Action Plan) with 15 actions aimed at tackling multinational tax avoidance (OECD, 2013). The BEPS Action Plan suggests a variety of legislative and administrative measures which all aim at eliminating double non-taxation or taxation at a level, which is perceived to be as too low or not in line with real economic activities. Only two years later and after an intense consultation process, on October 5 2015 the final reports were presented by the OECD (OECD) and endorsed by the G 20 Finance Ministers at the summit in Turkey later that year (OECD).

The overarching aim of the OECD BEPS Action Plan is to reform the international tax regime as well as domestic tax laws to prevent or at least hamper tax-avoiding practices of internationally active companies and multinational enterprises in the future. Therefore, the OECD BEPS Action Plan if properly designed and effectively implemented, would diminish international profit shifting and would align the location of economic activity with the location of taxation by requiring multinational companies to provide the necessary aggregate information. For “tax avoiding” companies this would result in an increase in tax payments while for less tax avoiding companies the tax burden should not increase. However, the increased tax burden of their more tax avoiding competitors might reduce their competitive advantage. For investors the prospective ramifications of the OECD BEPS Action Plan’s implementation on the tax burden of companies and their competitors might be an important element of forecasting the companies’ future after-tax profitability levels.

Our study therefore investigates the overall equity market reactions to the publication of the OECD BEPS Action Plan and several of the final and interim BEPS Action reports, thereby focusing on the key events of the introduction of the OECD BEPS Action Plan.

To gain insight in the perceptions of the investors towards the introduction of the OECD BEPS action plan, we investigate abnormal returns for firms incorporated and traded on the stock market in the OECD

member states for four events during the development of the OECD BEPS Action Plan. Overall, we find a negative market reaction for multinational companies across the relevant events, which suggests that the additional tax costs from limiting the possibilities for aggressive tax planning practices outweigh the benefits (such as more transparency, better international tax dispute resolution, etc) related to the introduction of the OECD BEPS Action Plan. Among the four events, the conclusion of the MLI shows the highest negative reaction. By splitting the sample into geographic subgroups, we examine the investor's reaction in different regions. Whereas the USA show a significant negative mean return across all events, we find inconclusive evidence for market reactions across the European Union (EU).

In general, we find that more tax avoiding firms show a stronger negative reaction to the events than less aggressive firms. Additionally, we perform cross-sectional analyses to examine whether the reaction to the publication of the OECD BEPS Action Plan is a function of firm characteristics associated with tax avoidance. Overall, we find that tax avoiding firms (lower levels of Cash-ETR) react more negative (lower levels of Cumulative Average Abnormal Returns – CAAR) to the publication of the various parts of the OECD BEPS Action Plan.

Therefore, our study contains several contributions to the economic, accounting and finance literature. First, we provide evidence as to how investors react to the introduction of the OECD BEPS Action Plan and thus information for future tax related regulatory changes and their consequences on the capital market. Second, we contribute to the literature by investigating the association between tax avoidance and stock return. Prior literature already examines the stock price reaction to news about tax avoidance eg tax shelter involvement (Hanlon and Slemrod, 2009) or disclosure of tax avoidance through whistleblowing activities for example LuxLeaks (Huesecken et al., 2018). However, our study investigates the market reaction to news about a restriction to tax avoiding practices by a wide-ranging prospective regulatory change and therefore, extends existing literature. Our analysis covers 36 countries, which provides a fertile testing ground for our analysis concerning the perception of different investors. Overall, it is essential for policymakers, governments and equity market participants to identify, understand and gain a better appreciation of the likely effects and the actual incidence of tax policies on tax avoiding behaviour. In this respect, this study offers a unique new setting by analysing of the introduction of the OECD BEPS Action Plan.

The remainder of this paper is organised as follows. Section 2 reviews prior research and develops hypotheses concerning the market reaction and our cross-sectional analysis. Section 3 presents the investigation strategy. Section 4 shows the empirical results including the cross-sectional analysis, the market reaction of domestic firms and a robustness check and section 5 concludes.

II. Related Literature and Hypothesis Development

This study investigates the perception of investors regarding the OECD activities towards BEPS. To infer the investors' perceptions to events regarding the OECD BEPS Action Plan the equity market reaction is examined. We perform an event study which has been used in a variety of research fields such as accounting, economic and finance (for an overview see eg Corrado, 2011; Kothari and Warner, 2007).

Prior literature dealing with tax related effects on the stock market mainly focus on company-level information disclosure, changes, decisions or results (eg stock splits: eg Fama *et al.*, 1969; earnings announcements: eg Ball and Brown, 1968; Beaver, 1968; tax shelter involvement: Hanlon and Slemrod, 2009; Luxembourg Tax Leaks: eg Nesbitt *et al.*, 2017).

Another stream of literature focuses on the investors' perception to external events. Considering event studies related to tax issues, a broad stream of literature investigates the market reaction to changes in specific tax categories or provisions. For example the increase in the individual (shareholder-level) income tax rate on share values by Ayers *et al.*, 2002, capital gain tax changes eg Lang and Shackelford, 2000 or the taxation of dividends eg Auerbach and Hassett, 2005 and Amromin *et al.*, 2008.

However, our study examines the overall market reaction to a wide-ranging regulatory change. Studies that use similar investigation techniques are ie Armstrong *et al.*, 2010 and Joos and Leung, 2012, which examine the market reaction to the adoption of IFRS in the European Union and the United States. They find a higher market reaction for companies with a lower information quality and a more positive reaction in cases where IFRS is expected to lead to convergence benefits and less positive for firms with higher litigation risk. Other studies examine the market reaction to the Sarbanes-Oxley Act (eg Espahbodi *et al.*, 2002; Li *et al.*, 2008; Zhang, 2007; Jain and Rezaee, 2006) or the market reactions to the likelihood and degree of implementation of the potential EU Audit Reform (Horton *et al.*, 2018).

Another stream of literature focusing on effects of a broad regulation are studies on the Tax Reform Act of 1986 in the United States. Cutler, 1988 suggests that the differential taxation of new and old capital could have substantial effects on market values. However, the paper finds little evidence of a large market response to tax related information. Givoly and Hayn, 1991 find that the net effect on corporate equity of the changes in the taxation of individuals (the elimination of the preferential treatment of capital gains and the reduction in the individual tax rates) was negative and due to its extent, the change was expected to be permanent. The study of Voeller and Müller, 2011 investigates the reaction to the adoption of the German Tax Reform 2008, which included a decrease in the statutory corporate income tax rate and a considerable reduction of interest taxation at the shareholder level and thus a higher tax benefit of debt. However, they find no significant overall market reaction but suggest positive price reactions of highly leveraged companies.

The OECD is a consensus-based network and thus lacks the power to mandate domestic legal changes in member states. The plan agreed on by the OECD and its member states is qualified as soft law. However, OECD member states and jurisdictions interested in joining the BEPS project are required to commit to the implementation of the BEPS package. Therefore, our study contributes to the above mentioned prior literature on the market reaction to wide-based regulatory changes. The introduction of the OECD BEPS Action Plan provides a unique setting to gain insight in the expectations of investors and the association of stock return and tax avoidance as its implementation is highly probable/virtually certain. Additionally, the Action Plan affects multiple jurisdictions, which allows us to exploit a cross-country setting.

Overall, it is hardly possible to *ex ante* predict investors' perceptions towards the introduction of the OECD BEPS Action Plan. It depends on the investors' expectations regarding the net benefits and costs of the implementation. Under the assumption of efficient stock markets, the stock returns around the identified event dates will reflect the expectations of shareholders and (prospective) investors regarding the implementation process and its effect on the value of the firm. As the introduction of the OECD BEPS Action Plan is not concentrated on one specific date, we examine the overall market reaction on different dates of interest (see below). The investors will react negatively if they expect an increase in (tax) costs. Contrary, the investors will react positively if they expect increasing disclosure requirements and thus a lowering in information asymmetry and risk (Armstrong *et al.*, 2010; Frischmann *et al.*, 2008).

Tax avoidance itself however could have a positive effect on firm value (Frischmann *et al.*, 2008; Wang, 2011; Robinson and Schmidt, 2013; Koester, 2011). This phenomenon can be explained easily, as higher tax avoidance could lead to less tax costs, increased after tax profits and therefore higher distributions to the shareholders. If shareholders demand a maximization of after tax cash-flows, managers will use techniques trying to avoid taxes. As an example the study of Bryant-Kutcher *et al.*, 2012 shows that the difference in tax costs is reflected in higher firm value for low tax rate firms. Another example for the positive relation between tax avoidance and firm value is the study of Chyz *et al.*, 2013 which shows that returns decrease around labour unions elections, as they usually reduce the firm's tax avoidance activities. Investors therefore may react negatively to the OECD BEPS Action Plan as tax avoiding activities are negatively affected by the measures introduced/proposed. However, tax aggressiveness may also lead to additional risk and therefore to additional costs for the company and thus to a lower firm value for the investors. These costs could include costs for tax litigation or for subsequent changes in tax planning strategies. The engagement in tax avoidance is also connected with a higher risk and uncertainty of penalties, back taxes and reputational losses. For example, Wilson, 2009 was able to identify 14 of 59 cases where the interest paid to tax authorities equalled on average 40 % of the total tax savings produced through the involvement in tax shelter activities. In nine cases, around 9 % of the total tax savings was spent on penalties. Another aspect is that shareholders expect the company to be

“optimally aggressive” (Hanlon and Slemrod, 2009). If aggressive tax avoidance becomes public, investors could interpret that not only as non-compliance towards tax authorities, but also aggressiveness towards the investors which could lead to higher scepticism about the accuracy of the financial statements (Hanlon and Slemrod, 2009).

Subsequently, the rising risk for increased attention by tax authorities in combination with penalties for illegal reduction of tax might lead to a decrease in cash flows (Crocker and Slemrod, 2005). If there is an information symmetry and an equal belief of the extent and the payoff of tax avoidance, no relation between tax avoidance and the firm value or shareholders reaction should be assumed (Hanlon and Heitzman, 2010). As stated above investors value consistent tax avoidance without an increase in risk or uncertainty. To the extent that the tax avoidance strategy of a firm exhausts non-risky opportunities, the positive valuation of investors towards tax avoidance practices is moderated by that risk (Drake *et al.*, 2017). Therefore, managers have to weigh potential benefits by tax savings against potential costs like increased risk of challenges by tax authorities, penalties or reputational costs (Graham *et al.*, 2013). In order to evaluate the risk accompanying tax avoidance practices, investors demand appropriate disclosure. Additionally, Desai and Dharmapala, 2006 suggest a negative relation between tax avoidance and managerial rent extraction if tax avoidance reduces corporate transparency and therefore, increases the opportunity for managers to use tax avoiding practices for personal benefit. Internal-control mechanisms are more likely in place at well-governed firms, whereas, poorly governed firms will not encourage tax avoidance (eg by equity incentives) because they lack the mechanisms to avoid managerial diversion. The study of Balakrishnan *et al.*, 2011 shows that financial transparency is a potential important cost of aggressive tax planning. Consistent with the notion that financial transparency facilitates the monitoring of managerial actions and thus mitigates investors’ concerns about the hidden risks and costs associated with tax avoidance, the investors may also react positively to the OECD BEPS Action Plan, if they support a higher information transparency and in consequence less risk.

Despite the cost and risk factor of tax avoidance, the objective of the Action Plan is to reduce profit shifting. Consequently, companies face higher tax costs, lower after-tax profits and lower distributions to shareholders. Whether because of less possibilities to shift profits or because of increased compliance costs eg for fulfilling the transparency standards. Assuming a profit-maximising target function for investors, the relatively little increase in control options due to transparency may be of secondary importance. Studies find that multinational companies are able to perform more effective tax planning (Rego, 2003; Mills *et al.*, 1998; Fuest *et al.*, 2013). Further studies show that reported income changes and support the hypothesis of international profit shifting on the basis of tax differentials (for an overview see Dharmapala, 2014). Additional evidence for profit shifting is provided for the US (Clausing, 2003, 2016) and for European multinationals (Huizinga and Laeven, 2008; Weichenrieder,

2009; Loretz and Mokkalas, 2015). The OECD BEPS Action Plan is aimed at combating this multinational tax avoidance, so we state the following hypothesis:

H1: There will be a negative market reaction for multinational firms to the introduction of the OECD BEPS Plan.

Taking into consideration all kind of transactions aimed at lowering the tax liability, different characteristics are attributed to tax avoiding firms. These characteristics are ie foreign activities (Rego, 2003), R&D expenditures and a technology focus (Graham and Tucker, 2006), highly leveraged (Wilson, 2009; Lisowsky, 2010), or larger firm size (Shevlin and Porter, 1992; Rego, 2003). The literature shows a direct effect of tax avoiding behaviour for example the increase of cash flows ie after the deduction of a normally non-deductible expense, and an indirect effect by lowering the benefits of interest deduction due to a higher non-debt tax shield (eg Graham and Tucker, 2006). Overall, the goal of the OECD BEPS Action Plan is to complement existing standards to prevent double non-taxation or (too) low taxation associated with practices that artificially segregate taxable income from the real activities that generate it. Firms, which conduct aggressive tax planning and thus try to reduce their tax liability, are potentially more affected by the measures introduced through the OECD BEPS Action Plan.

H2: There will be a stronger market reaction for more tax avoiding multinational firms than for less tax avoiding multinational firms.

III. Investigation Strategy

A. Event Study Method

Under the assumption of capital market efficiency, a stock price reflects all relevant information available. The share price movement is described as “random walk” and therefore the future share prices cannot be explained by past share prices (Fama, 1965). However, an adjustment to the price is not made until new information has been provided which is considered by the market to be relevant to the valuation. The adjustment then takes place without delay (Fama *et al.*, 1969; Fama, 1965). Therefore, stock prices reflect all obtainable information and almost instantaneous adjustment (Brown and Warner, 1980, 1985; Schwert, 1981; Fama, 1991; Beaver, 1968). Additionally, the asset pricing model literature and the cash flow approach indicate that one-off adjustment in a corporate share price takes place if changes in after tax cash flows and disposable income occur (Cutler, 1988; Freebairn and Quiggin, 2010).

After the G20 meeting in 2012 there have been rumors, hearings and some public speeches by OECD officials, however, no concrete details about the measures were presented (Brauner, 2014). Therefore, the recommendations and detailed information regarding the different Action Points included in the

reports were not completely new, but certainly included surprises, which will have an effect on firm's future expected cash flow. Additionally, it was not expected that the OECD kept the proposed timeline for the publication of the reports.

The seminal papers of Ball and Brown, 1968 and Fama *et al.*, 1969 introduced the event study methodology to accounting and financial research and also into the field of law and economics. By using financial market data, the impact of a specific event on the value of a firm as reflected by the stock price is measured. For our study, we chose a daily price-based event study model to draw inferences about the impact of the introduction of the OECD BEPS Action Plan on shareholders' value (other event studies focus on trading volume, return variances, etc). Through the application of the event study methodology abnormal price performance in financial assets is identified. By examining the abnormal price change it is possible to measure the effect of a specific event on the wealth of shareholder (Brown and Warner, 1980, 1985; Schwert, 1981; Fama, 1991; MacKinlay, 1997; Kothari and Warner, 2007; Kolari and Pynnönen, 2010; Beaver, 1968).

In order to measure the equity market reaction to the OECD BEPS Action Plan we chose a short-term horizon to get a more precise and consistent measure. A short-horizon event study allows a more specified, reliable measure that is subject to less limitation and makes it possible to exclude confounding events (Kothari and Warner, 2007; Corrado, 2011).

To measure the investors' perception, the price-based event study methodology uses daily abnormal returns. The abnormal return is defined as the difference between the actual ex post return of the security over the event window and the normal return of the firm over the estimation window (MacKinlay, 1997):

$$AR_{it} = R_{it} - E[R_{it}/R_{mt}] \quad (1)$$

where AR_{it} is the abnormal return of a firm in t , R_{it} is the actual return and $E[R_{it}/R_{mt}]$ is the normal (ie, expected or predicted) return. For estimating the normal return, we chose the market model approach to control for market fluctuation and both risk and market-wide movements. The market model assumes that the normal or expected return on a security is linearly related to its covariance with the return on a so called market portfolio which is the return on some index including all marketable risky securities (Sharpe, 1963, 1964; Brown and Warner, 1980; Kothari and Warner, 2007). The abnormal return is then defined as follows:

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i * R_{mt}) \quad (2)$$

where $\hat{\alpha}_i$ and $\hat{\beta}_i$ are ordinary least squares (OLS) regression estimates from the estimation period following from the regression $R_{it} = \alpha_i + \beta_i * R_{mt}$ and R_{mt} is the respective benchmark index. Due to our global sample and the investigation of the global capital market, we chose the S&P Global 1200 Index for our benchmark index. Generally, if an event study is run for a certain country, the country's broadest stock index is used as the proxy for the market portfolio. As our event study comprised

companies from diverse European, American, and Asian countries, we decided to use the S&P Global 1200 Index. The advantage of a widely scattered index is that it is not influenced by the events itself. By using the S&P Global 1200 Index we control for global macroeconomic effects, and hence increase the probability that the abnormal returns we see are actually caused by the events of interest. For the estimation period to predict the normal return, we chose an estimation window of 120 trading days beginning 122 days before the relevant event.²

After obtaining abnormal returns the cumulative reaction (CAR) of every firm over the specified event window is determined as the sum of abnormal returns over the event window.

$$CAR_{it} = \sum_i^T AR_{it} \quad (3)$$

To make an overall inference about the average effect on the introduction of the OECD BEPS Action Plan on shareholders' wealth a cross-section aggregation becomes necessary. Therefore, we calculate the Average Abnormal Return (AAR) and the Cumulative Average Abnormal Return across all firms (CAAR) over the event window.

$$AAR = \frac{1}{N} \sum_i^N AR_{it}$$

where AR_{it} represents the AR estimated for stock i averaged across all firms.

$$CAAR = \frac{1}{N} \sum_i^N AAR_{it} \quad (4)$$

For the event window, we chose an interval of -1 to +1 days around the event date, which corresponds to a three-day event window. The day before the event is included to ensure that a possible leakage of information is observed. The return of the day following the event date is included to add the effects after the stock market is closed and for giving the market time to react.

B. Event dates

Because the introduction of the OECD BEPS Action Plan was a process that evolved over time, we identify 4 events between 2013 and 2016 that we determine as the events of important announcements and publications. We identify the events by searching the OECD News page. We focus on the following events to gain an insight in the expectations of investors regarding the net benefits and costs of the Anti BEPS Plan.

(1) The first event is 19th July 2013, when the Action Plan on BEPS was released.

² Based on the suggestion in MacKinlay (1997), p 15.

(2) On 16th September 2014, seven of the fifteen actions were addressed through recommendations and reports in the BEPS 2014 Deliverables and the next steps for BEPS work were outlined.

(3) On 5th October 2015, the final report including all final measures was presented providing solutions to close gaps in rules that allow the shifting of corporate profits to low/no tax countries without a corresponding economic activity there.

(4) The next important step was the conclusion of negotiations between over 100 jurisdictions on the Multilateral Instrument (MLI) on 24th November 2016.³ The MLI facilitates the implementation of treaty related measures and implements the minimum standards to counter treaty abuse and to improve dispute resolution and entered into force on 1st July 2018 including 85 jurisdictions.

[Insert Table 1 about here]

C. Importance of correct dates and confounding events

Identifying the correct events and making sure that no confounding news occur during the event window is a prerequisite for making the event study reliable (see Campbell *et al.*, 1997). Such non-events could lead to a potential bias of our event study results, introducing noise or by excluding relevant events reducing explanatory power (Armstrong *et al.*, 2010). Such confounding events could therefore distort the empirical results of our event study. To minimize the chance of confounding news we searched the *DowJones Factiva* for events within our event windows. Therefore, we search in the subject areas of Commodity/Financial Market News, Corporate/Industrial News, Economic News, Political/General News and Selection of Top Stories/Trends/Analysis without any limitations of region to ensure any confounding event is identified. While we did not find any specific major confounding news during our event windows we cannot completely exclude the possibility of confounding events influencing our results.

Additionally, to reduce the risk of confounding news we chose a very small interval for the event window. The event window should be short enough to exclude confounding events and long enough to include the effect of the relevant event (McWilliams and Siegel, 1997). Firms with the experience of confounding events during the event window were not removed from the sample as unrelated individual company events have a small expected effect over a large sample (Thompson, 1988).

As the event dates concerning the introduction of the OECD BEPS Action Plan can be established with confidence, short event windows should capture all reactions relating to the events of interest.

³ In the United States the public holiday Thanksgiving was on 24th November 2016. Due to that, we decided to change the event date for the USA for that specific event to the 25th November 2016 in order to keep the US firms in our sample and provide reliable results.

D. Data and Sample Selection

We infer investors' perceptions relating to the Anti BEPS project by examining all multinational companies of the OECD member states with daily share prices included in the Thomson Reuters DataStream database. The company is qualified as multinational if foreign assets or foreign income is reported, and domestic otherwise. Already Ball, 1978 showed that potentially severe biases could appear from infrequently traded securities. We thus exclude companies with more than 20 missing stock prices during the estimation window and require a minimum of 100 observations in the estimation window. Thereby, we avoid the issue of thin trading by including the requirement of availability of mostly daily stock price data. The calculation of abnormal returns therefore focuses on firms with informed investors, as changes in expectation are better reflected in frequently traded shares than in infrequently traded shares (Voeller and Müller, 2011). As stated above the S&P Global 1200 index data, also obtained from Thomson Reuters DataStream, is used to predict the normal return of our market portfolio.

IV. Results

A. Descriptive Statistics

Our sample includes the multinational companies for which daily stock returns are available in the estimation window and the event window of each relevant event date. The sample yields the following number of firms for the geographic regions of European Union, USA, Japan and the rest of the OECD member states⁴.

The number of observations per event is stable and ranges from 5,811 (Event 1 – July 2013) to 6,088 (Event 2 – Sep 2014) with an average of 5,929 observations per event. In total, our sample consists of 23,719 observations. The geographic composition of our sample is also stable across the events. Observations from the European Union form the largest share (between 33.8% and 37.4% - average: 34.75%) while firms from Japan represent the smallest geographical region (average: 1,039 firms per event). On average 1,240 firms per event from the United States enter our investigation. The category "Rest" includes all other OECD Member States. The most important countries with respect to number of observations in this group are South Korea and Canada.

[Insert Table 2 about here]

⁴ In our geographical clustering the group called "Rest" includes the countries: Australia, Canada, Chile, Iceland, Israel, South Korea, Mexico, New Zealand, Switzerland and Turkey.

B. Empirical results

Table 3 presents the results of the overall market reaction for four relevant event dates. The mean abnormal return across all four events and across all geographic regions shown in column 5 is negative and significantly different from zero at the 5% significance level. We thus find an overall negative reaction of the capital markets to the OECD BEPS Action Plan. Investors in general seem to assume an increase in tax payments and subsequently a decrease in after-tax profits caused by the measures proposed by the OECD BEPS Action Plan. The positive effects relating to the increase in financial transparency that may facilitate the monitoring of managerial actions and thus mitigate investors' concerns about the hidden risks and costs associated with tax avoidance are of lower importance. The conclusion of the MLI shows the highest negative reaction.

However, the third event, which represents the publication of the final reports on the 15 Actions, shows a positive abnormal return. This seems surprising; however, it can be attributed to the specific items that were published on that date. The second set of reports contained a number of actions such as dispute resolution and clarifications regarding transfer pricing, that can be regarded as more beneficial to the taxpayers than the first set of reports. Therefore, the positive cumulative abnormal return represents the positive surprise felt by the market after the publication of the second set of actions.

The conclusion of the MLI experienced the highest negative reaction of the investors. With the adoption of the MLI, the legal quality of the OECD BEPS Action Plan changed from a soft law measure with average chances of implementation given the recent history of similar OECD initiatives into a soft law measure with high chances of implementation.

[Insert Table 3 about here]

Focusing on the specific geographical regions and on the various individual events, the results are more multifaceted (see Table 4): For the USA the mean abnormal returns across all events is negative and significant. The EU, Japan and the Rest of the OECD Member States show non-significant mean abnormal returns across all events. However, all geographic regions show at least for two event dates a significant negative abnormal return. Whereby, the timing of the effect and the magnitude of the negative abnormal return is different across the geographical regions.

[Insert Table 4 about here]

The USA show a negative significant cumulative abnormal return on three of the four event dates investigated in this study. The two event dates (BEPS Action Plan; first set of reports) have all negative cumulative abnormal returns, which can be interpreted as very timely reactions by the capital markets regarding US multinationals, which have been discussed by the media as being predominantly highly tax avoiding. Especially the USA recognized the event of the MLI adoption more negatively in comparison to the other geographical groups. Although the USA did not sign the MLI on 7th June 2017, there still will be an impact on US multinationals, because it has to be considered in the tax planning

process that the MLI will affect treaties in many jurisdictions where they operate (Bloomberg Tax, 2018).

For European firms the market reactions on three of the four event dates is negative and significant. These reactions support our hypotheses. On the first event date (publication of the OECD BEPS Action Plan), the market for European firms also shows a positive reaction. For this date, we do not find any confounding news. The European market thus at first appreciates the initiative against aggressive tax planning structures as an initiative that alleviates the competitive disadvantages of European firms which are traditionally seen as less tax avoiding than US firms. Especially the German and the French stock markets (not tabulated) reacted positively since German and French firms have traditionally relatively high effective tax rates and are considered not overly tax avoiding (Thomsen and Watrin, 2018). However, the events (2) to (4) show a negative reaction, which indicates a change in the investors' perception.

For Japanese firms the market reactions on the various dates are not as easy to interpret as the reactions for US firms. The Japanese market shows a negative reaction on two of the four event dates (events 1 and 2). These event dates are part of those with the most detailed information published by the OECD (events 1 and 2).

Since the OECD BEPS Action Plan aims at preventing aggressive tax planning by multinational enterprises, companies that employ more aggressive tax avoidance practices are potentially more affected by the proposed measures. Therefore, also the share prices of more tax avoiding firms might react stronger to the OECD BEPS Action Plan. To measure the perception of investors towards tax avoidance we calculate the three year average cash effective tax rate for every MNE in our sample (Cash-ETR) (Dyreg *et al.*, 2008; Hanlon and Slemrod, 2009), normalize it with the local mandatory corporate income tax rate, and split the sample at the median into two groups (for a detailed variable description see below). Additionally, we exclude loss firms because they may have different reasons or attenuated incentives for engaging in tax avoidance (eg Desai and Dharmapahla, 2006). The first group with an average three-year Cash-ETR above the sample median (less tax avoiding companies) and the second group with an average three-year Cash-ETR below the median (tax avoiding companies).

[Insert Table 5 about here]

Table 5 reports the results for the overall market reaction for the two groups of companies. The more tax avoiding firms (Cash-ETR below the median) show a negative average abnormal return of 0.00338 on a significance level of 1 % across all events. On the contrary, the firms with a Cash-ETR above the median show no significant value across the events. This result supports our hypothesis 2, that more tax avoiding firms show on average a more negative reaction to the introduction of the OECD BEPS Action Plan. Overall, the investors of more tax avoiding firms perceive the OECD BEPS Action Plan negatively

and expect the increase in transparency is not able to outweigh the higher tax costs through higher regulations preventing tax avoiding practices.

The event in 2013 concerning the release of the Action Plan, produced no significant reaction on the capital markets across all geographic regions. The results for the events providing the Interim Report to the public in the year 2014, the Final report in the year 2015 and the conclusion of the MLI support the previous described findings and show a more negative result for tax avoiding companies. Additionally, all four geographic groups show a more negative reaction across all events for tax avoiding firms.

[Insert Table 6 about here]

Focusing on the various geographical regions and individual events, the results show again a very multifaceted picture. In general, table 6 shows that the capital market reaction at the various event dates is more negative for more tax avoiding firms. However, the result is not as consistent as the previous result, as some events show no significant difference between the two groups.

[Insert Table 7 about here]

Due to the inconsistent result for the geographical subgroups, we investigate the capital market reaction of the highest and the lowest quartile of the variable Cash-ETR and therefore, compare the firms with the highest level of tax avoidance and the firms with the lowest level of tax avoidance. Table 7 presents the results of the capital market reaction of the most and least tax avoiding firms. The overall market reaction for the two groups of companies supports previous findings and the hypotheses that tax avoiding firms react more negatively to the introduction of the OECD BEPS Action Plan. Additionally, the overall reaction across the event dates is stronger for the multinationals with the highest level of tax avoiding activities in the USA, and the Rest of the OECD member states.. In addition, the results of the geographical subgroups support our hypotheses. In general, the results presented in table 5, table 6 and table 7 suggest that the capital market reactions are stronger for more tax avoiding companies.

C. Cross-sectional analysis

To determine sources of the market reaction observed and explain cross-sectional variations in the investors' perception of multinationals, we examine specific firm-level characteristics associated with tax avoidance. We estimate the following regression model on the dependent variable CAAR (Cumulative Average Abnormal Return):

$$CAAR = \alpha + \beta_1 CashETR + \beta_2 SIZE + \beta_3 ROA + \beta_4 R\&D + \beta_5 Lev + \beta_6 Loss \quad (5)$$

We use three-year cash effective tax rates (Cash-ETR) as a measure of tax avoidance. As described above we calculate the average cash effective tax rate to measure the perception of investors towards

tax avoidance (Dyreng *et al.*, 2008; Hanlon and Slemrod, 2009). For the calculation, we use a period of three years including the event year and the two years before and deduct discontinued operations and extraordinary items for this period. By using cash taxes paid the measure is not affected by changes in accounting estimates and by calculating the Cash-ETR over a longer period a better matching of taxes paid and the corresponding income is possible (Dyreng *et al.*, 2008). Additionally, it is possible to identify firms that avoid taxes over a longer period of time (Hanlon and Heitzman, 2010). Missing values of extraordinary items and discontinued operations are set to zero. The total measure is replaced with zero if the company has a negative pre-tax income. We also include a dummy variable *Loss* set to one and adjust the Cash-ETR to zero for these firms. If the Cash-ETR is not available, we replace the measure with the current tax expense. In order to limit the influence of outliers we only include values of Cash-ETR between zero and one. Because of the global sample that includes observations from countries with different corporate income tax regimes, we normalize the Cash-ETR with the local mandatory corporate income tax rate of the MNE's parent company. We include a series of control variables that have been shown by previous literature as being strongly related to tax avoidance (for references see eg Desai and Dharmapala, 2009). Table 8 presents the variables, their definitions and the data sources.

[Insert Table 8 about here]

Table 9 reports the results of the estimated regression. The coefficient of Cash-ETR for the full sample over all events relevant for the introduction on the OECD BEPS Action Plan is positive and significant. The result suggests that a decrease in Cash-ETR is associated with a lower CAAR in the event windows. This represents a stronger and more negative market reaction the more tax avoiding a firm is. These results confirm our findings above (see table 5) for the sample split at the median Cash-ETR. The indicator variable *Loss* shows a significant positive reaction. Thus, the share prices of loss making firms react stronger to the OECD BEPS Action Plan. This result is in line with prior research showing that loss making is strongly correlated to tax avoidance. Firm Size has a negative coefficient meaning that the reaction for bigger firms is more negative. The negative coefficient for R&D expenditures can be interpreted as the markets' perception that tax avoidance that is linked to R&D activity is more sustainable than other forms of tax avoidance. By splitting the sample into geographic regions, the same conclusions can be drawn. For Japan only significant results for the variable *Size* and *Loss* are estimated, that support previous findings.

[Insert Table 9 about here]

D. Domestic firms

As the OECD BEPS Action Plan is primarily aimed at tackling tax avoiding practices of multinationals, domestic companies should show a weaker or even no significant reaction to the related events. The

mean return of the full sample across all events for the introduction on the OECD BEPS Action Plan is not significant for domestic companies (see table 10).

[Insert Table 10 about here]

When splitting the sample into geographical regions we find again heterogeneous results. The results of domestic companies are rather similar as the results for MNE. These results together with the results for event (2) and (4) suggest that there are some spill over effects onto the equity markets for purely domestic firms. Additionally, the OECD BEPS Action Plan does not only contain rules proposed purely for multinationals, rules such as the interest barrier rule (Action 4) or the disclosure of aggressive tax planning (Action 12) are measures that also address and apply to purely domestic firms.

E. Alternative Measure of Tax Avoidance

To provide robustness we re-estimate our tax avoidance measure by using the measure introduced by Atwood et. al. (2012). Therefore, the tax on pre-tax income is calculated at the home-country statutory corporate tax rate less the taxes actually paid, expressed as a percentage of pre-tax income. Additionally, we again used a period of three years.

$$TaxAvoid_{it} = \frac{[\sum_{t-2}^t (PINC \times CIT)_{it} - \sum_{t-2}^t TXPD_{it}]}{\sum_{t-2}^t PINC_{it}} \quad (6)$$

where PINC is the pre-tax income less discontinued operations and extraordinary items for a period of three years, CIT is the local statutory corporate income tax rate of the MNE's parent company in the year of the event and TXPD are the taxes paid (replaced by current income taxes if variable taxes paid is not available).

Generally, we find that the market reaction at the individual events and the mean return across all events is more pronounced for tax avoiding firms. Therefore, the inference about the stronger reaction of tax avoiding firms in our second hypothesis holds.

[Insert Table 11 about here]

V. Conclusion

In the light of the OECD BEPS Action Plan and its aim to reform the international tax regime, as well as domestic tax laws, to prevent or at least hamper tax-avoiding practices of multinational enterprises, we examine the overall equity market reactions to the publication of the OECD BEPS Action Plan and several of its interim reports. Our analysis covers all multinational companies of the 36 OECD member states with daily share prices available.

By using the event study methodology, investigating the market reaction to four key events of the introduction of the OECD BEPS Action Plan between 2013 and 2016, we find a negative overall market reaction of investors in multinational companies across the relevant events. This suggests that the additional tax costs from limiting the possibilities for aggressive tax planning practices outweigh the benefits (such as more transparency, better international tax dispute resolution, etc) related to the introduction of the OECD BEPS Action Plan. The conclusion of the MLI shows the highest negative reaction. By splitting the sample into geographic subgroups, we examine the investors' reactions in different regions. Whereas the USA show a significant negative mean return across all events, we find inconclusive evidence for market reactions in the EU, Japan (JAP) and the rest of the OECD member states. However, all geographic regions show at least for two event dates a significant negative abnormal return.

The results show that more tax avoiding firms have a stronger negative reaction to the events than less aggressive firms. Additionally, we perform cross-sectional analyses to examine whether the reaction to the publication of the various parts of the OECD BEPS Action Plan is a function of firm characteristics associated with tax avoidance. Overall, we find that tax avoiding firms (lower levels of Cash-ETR) react stronger (higher levels of Cumulative Abnormal Returns – CAR) to the publication of the various parts of the OECD BEPS Action Plan.

The results of this paper are important providing evidence as to how investors reacted to the introduction of the OECD BEPS Action Plan. Second, we contribute to the literature by investigating the association between tax avoidance/tax avoidance and firm value and/or stock return. Prior literature already examines the stock price reaction to news about tax avoidance eg tax shelter involvement (Hanlon and Slemrod, 2009) or disclosure of tax avoidance through whistleblowing activities for example LuxLeaks (Huesecken et al., 2018). However, our study investigates the market reaction to news about a restriction to tax avoiding practices by a wide-ranging prospective regulatory change. The OECD BEPS Action plan introduction provides us with a unique setting as it is probable certain and by including 36 countries, we have a fertile testing ground for our analysis concerning the perception of different investors.

VI. References

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Table 1: Events of the OECD BEPS Action Plan development

This table presents the events between 2013 and 2016 that we determine as the events of important announcements and publications of the OECD BEPS Action Plan development process. The first column shows the event dates. The second and third column show a short description of the event and additional comments for more detailed information.

Event	Description	Comments
(1) 07/19/2013	OECD BEPS Action Plan	Publication of BEPS Action Plan
(2) 09/16/2014	Interim Report	Publication of the interim report including following : <ul style="list-style-type: none">- Action 1: Digital Economy- Action 2: Hybrid Mismatches- Action 5: Harmful Tax Practices- Action 6: Treaty Abuse- Action 8: Transfer Pricing Intangibles- Action 13: Transfer Pricing documentation & CbCR- Action 15: MLI
(3) 10/05/2015	Final Report	Publication of the Final Report including all Action-points
(4) 11/24/2016	Adoption of the Multilateral Instrument	In November 2016, over 100 jurisdictions concluded negotiations on the Multilateral Convention to Implement Tax Treaty Related Measures to Prevent Base Erosion and Profit Shifting ("Multilateral Instrument" or "MLI")

Table 2: Sample Composition by geographic region and event

This table presents the sample of multinational companies for which daily stock returns are available in the estimation window and the event window of each relevant event date. The sample is split into geographic regions including all OECD member states, which are a member of the European Union (*EU*), the United States (*USA*), Japan (*JAP*) and the rest of the OECD member states not included in the previous subgroups (*Rest*).

	(1) Action Plan (July 2013)	(2) Interim Report (Sep 2014)	(3) Final Report (Oct 2015)	(4) MLI (Nov 2016)
<i>EU</i>	2,039 – 35.0%	2,072 – 34.1%	2,014 – 34.2%	2,005 – 33.8%
<i>USA</i>	1,183 – 20.5%	1,237 – 20.3%	1,254 – 21.2%	1,294 – 21.8%
<i>JAP</i>	1,015 – 17.4%	1,046 – 17.1%	1,080 – 18.3%	1,017 – 17.1%
<i>Rest</i>	1,574 – 27.1%	1,733 – 28.5%	1,551 – 26.3%	1,621 – 27.3%
<i>Total</i>	5,811	6,088	5,889	5,937

Table 3: Overall market reaction of MNEs to OECD BEPS Action Plan events

This table presents the Average Cumulative Abnormal Return (CAAR) of the full sample for each event date. CAAR is calculated over a three-day window centred on the event date. The S&P Global 1200 index is our benchmark index for calculating CAAR following the market model. Column (1) is the market reaction for the release of the Action Plan in July 2013. Column (2) presents the overall CAAR at the release of the Interim Report and column (3) at the release of the Final Report. Column (4) present the CAAR in the event window of the conclusion of the negotiation relating to the MLI. Additionally, the mean return across all events is shown in column (5). To avoid heteroscedasticity robust standard errors are used. *, **, *** indicate significance at 10%, 5% and 1% levels, respectively. Standard errors are in parentheses.

	(1) Action Plan (July 2013)	(2) Interim Report (Sep 2014)	(3) Final Report (Oct 2015)	(4) MLI (Nov 2016)	(5) Mean return across all events
<i>Overall</i>	0.000814 (0.000773)	-0.00568*** (0.000642)	0.00513*** (0.000909)	-0.00573*** (0.000976)	-0.00142*** (0.000418)
<i>Obs</i>	5,811	6,088	5,889	5,937	23,725

Table 4: Overall market reaction of MNEs to OECD BEPS Action Plan events by geographic region

This table presents the Average Cumulative Abnormal Return (CAAR) of the full sample for each event date. The sample is split in different geographic regions, namely the European Union, the United States, Japan and the rest of the OECD member states. Column (1) is the overall market reaction for the release of the Action Plan in July 2013. Column (2) presents the overall CAAR at the release of the Interim Report and column (3) at the release of the Final Report. Column (4) present the CAAR in the event window of the conclusion of the negotiation relating to the MLI. Additionally, the mean return across all events is shown in column (5). To avoid heteroscedasticity robust standard errors are used. *, **, *** indicate significance at 10%, 5% and 1% levels, respectively. Standard errors are in parentheses.

	(1) Action Plan (July 2013)	(2) Interim Report (Sep 2014)	(3) Final Report (Oct 2015)	(4) MLI (Nov 2016)	(5) Mean return across all events
<i>EU</i>	0.00541*** (0.00120)	-0.00168* (0.000981)	-0.00558*** (0.00146)	-0.000915* (0.000481)	-0.000679 (0.000547)
<i>Obs</i>	2,039	2,072	2,014	2,005	8,130
<i>USA</i>	-0.00524** (0.00207)	-0.0129*** (0.00142)	0.0167*** (0.00204)	-0.0141*** (0.00227)	-0.00391*** (0.00101)
<i>Obs</i>	1,183	1,237	1,254	1,294	4,968
<i>JAP</i>	-0.0160*** (0.00145)	-0.00442*** (0.00157)	0.0126*** (0.00161)	0.00717** (0.00320)	-2.28e-05 (0.00105)
<i>Obs</i>	1,015	1,046	1,070	1,017	4,148
<i>Rest</i>	0.0102*** (0.00149)	-0.00611*** (0.00133)	0.00450** (0.00205)	-0.0131*** (0.00223)	-0.00134 (0.000906)
<i>Obs</i>	1,574	1,733	1,551	1,621	6,479

Table 5: Overall market reaction of MNEs above and below the Cash-ETR median

This table presents the Average Cumulative Abnormal Return (CAAR) for every MNE in our sample split at the median of the three year average cash effective tax rate (Cash-ETR) into two groups for the individual events. Loss firms are excluded. The total measure is replaced with zero if the company has a negative pre-tax income. We also adjust the Cash-ETR to zero for loss firms. If the tax expense is not available, we replace the measure with the current tax expense. In order to limit the influence of outliers we only include values of Cash-ETR between zero and one. Because of the global sample that includes observations from countries with different corporate income tax regimes, we normalize the Cash-ETR with the local mandatory corporate income tax rate of the MNE's parent company. The sample consists out of two groups: The first group with an average three-year Cash-ETR above the sample median (less tax avoiding companies) and the second group with an average three-year Cash-ETR below the median (tax avoiding companies). Additionally, the mean return across all events again split at the median of the three year Cash-ETR is shown. To avoid heteroscedasticity robust standard errors are used. *, **, *** indicate significance at 10%, 5% and 1% levels, respectively. Standard errors are in parentheses.

	(1) Action Plan (July 2013)		(2) Interim Report (Sep 2014)		(3) Final Report (Oct 2015)		(4) MLI (Nov 2016)		(5) Mean return across all events	
	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding
Overall	0.00106 (0.000881)	-0.00138 (0.000878)	-0.00312*** (0.000819)	-0.00486*** (0.000839)	0.00276** (0.00119)	-0.00358*** (0.00113)	-0.00219 (0.00169)	-0.00382*** (0.00132)	-0.000442 (0.000600)	-0.00338*** (0.000530)
<i>Obs</i>	2,273	2,274	2,350	2,351	2,294	2,295	2,331	2,332	9,250	9,250

Table 6: Market reaction of MNEs above and below the Cash-ETR median by geographic region

This table presents the Average Cumulative Abnormal Return (CAAR) for every MNE in our sample split at the median of the three-year average cash effective tax rate (Cash-ETR) into two groups and divided by geographic region for the individual events. Loss firms are excluded. For a detailed description of the measure see Table 8. The sample consists out of two groups: The first group with an average three-year Cash-ETR above the sample median (less tax avoiding companies) and the second group with an average three-year Cash-ETR below the median (tax avoiding companies). The four geographic groups are the member states of the European Union (*EU*), the United States (*USA*), Japan (*JAP*) and the rest of the OECD member states not included in the previous subgroups (*Rest*). Additionally, the mean return across all events again split at the median of the three year Cash-ETR is shown. To avoid heteroscedasticity robust standard errors are used. *, **, *** indicate significance at 10%, 5% and 1% levels, respectively. Standard errors are in parentheses.

	(1) Action Plan (July 2013)		(2) Interim Report (Sep 2014)		(3) Final Report (Oct 2015)		(4) MLI (Nov 2016)		(5) Mean return across all events	
	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding
<i>EU</i>	0.00517*** (0.00144)	0.00402*** (0.00143)	-0.00277** (0.00121)	0.000426 (0.00132)	-0.00734*** (0.00191)	-0.0137*** (0.00178)	-0.000825 (0.000511)	0.000141 (0.000738)	-0.00152** (0.000685)	-0.00220*** (0.000691)
<i>Obs</i>	770	771	790	791	772	772	783	783	3,116	3,116
<i>USA</i>	-0.00314* (0.00169)	-0.00663*** (0.00153)	-0.00956*** (0.00145)	-0.0114*** (0.00156)	0.0125*** (0.00273)	0.00450* (0.00236)	-0.00997*** (0.00260)	-0.00711* (0.00366)	-0.00245** (0.00112)	-0.00528*** (0.00122)
<i>Obs</i>	471	472	483	484	477	477	478	479	1,910	1,911
<i>JAP</i>	-0.0130*** (0.00172)	-0.0135*** (0.00222)	-0.00253 (0.00204)	-0.00106 (0.00211)	0.00791*** (0.00202)	0.0173*** (0.00263)	0.000638 (0.00499)	0.0111** (0.00442)	-0.000301 (0.00153)	0.00255* (0.00151)
<i>Obs</i>	451	451	464	464	488	488	471	471	1,874	1,874
<i>Rest</i>	0.00892*** (0.00178)	0.00609*** (0.00208)	-0.00309* (0.00181)	-0.00527*** (0.00193)	-0.00125 (0.00278)	-0.00949*** (0.00235)	-0.00559 (0.00449)	-0.0125*** (0.00273)	-0.000331 (0.00147)	-0.00530*** (0.00116)
<i>Obs</i>	579	582	612	613	557	558	599	599	2,349	2,350

Table 7: Market reaction of MNEs of the first and the fourth quartile of the Cash-ETR by geographic region

This table presents the Average Cumulative Abnormal Return (CAAR) for every MNE divided in two groups within the highest and the lowest quartile of the three-year average cash effective tax rate (Cash-ETR) and split by geographic region for the individual events. Loss firms are excluded. For a detailed description of the measure see Table 8. The sample consists out of two groups: The first group within the highest quartile of the three-year Cash-ETR (less tax avoiding companies) and the second group within the lowest quartile of the three-year Cash-ETR (tax avoiding companies). The four geographic groups are the member states of the European Union (*EU*), the United States (*USA*), Japan (*JAP*) and the rest of the OECD member states not included in the previous subgroups (*Rest*). Additionally, the mean return across all events again split at the median of the three year Cash-ETR is shown. To avoid heteroscedasticity robust standard errors are used. *, **, *** indicate significance at 10%, 5% and 1% levels, respectively. Standard errors are in parentheses.

	(1) Action Plan (July 2013)		(2) Interim Report (Sep 2014)		(3) Final Report (Oct 2015)		(4) MLI (Nov 2016)		(5) Mean return across all events	
	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding
Overall	0.00145 (0.00125)	-0.00159 (0.00129)	-0.00290** (0.00127)	-0.00472*** (0.00129)	0.00492*** (0.00184)	-0.00530*** (0.00160)	-0.00236 (0.00285)	-0.00577*** (0.00197)	0.000119 (0.000959)	-0.00446*** (0.000773)
<i>Obs</i>	1,136	1,137	1,175	1,176	1,147	1,148	1,165	1,166	4,625	4,625
EU	0.00675*** (0.00207)	0.00457** (0.00191)	-0.00275 (0.00175)	0.00146 (0.00205)	-0.00407 (0.00290)	-0.0123*** (0.00247)	-0.00132* (0.000721)	-0.000223 (0.00115)	-0.000283 (0.00103)	-0.00157 (0.000986)
<i>Obs</i>	385	386	395	396	386	386	391	392	1,558	1,558
USA	-0.00365 (0.00247)	-0.00772*** (0.00225)	-0.00997*** (0.00212)	-0.0124*** (0.00235)	0.0229*** (0.00439)	0.00607 (0.00374)	-0.0139*** (0.00400)	-0.0154*** (0.00491)	-0.000858 (0.00176)	-0.00695*** (0.00176)
<i>Obs</i>	235	236	241	242	238	239	239	240	955	956
JAP	-0.0166*** (0.00255)	-0.0161*** (0.00321)	-0.00212 (0.00327)	-0.00335 (0.00308)	0.00858*** (0.00291)	0.0193*** (0.00411)	0.00657 (0.00656)	0.0141** (0.00694)	0.000303 (0.00207)	0.00147 (0.00222)
<i>Obs</i>	225	226	232	232	244	244	235	236	937	937
Rest	0.0103*** (0.00248)	0.00642** (0.00324)	-0.00234 (0.00283)	-0.00524* (0.00296)	0.00420 (0.00445)	-0.0123*** (0.00358)	-0.00730 (0.00594)	-0.0158*** (0.00389)	0.000585 (0.00209)	-0.00648*** (0.00173)
<i>Obs</i>	290	291	306	307	278	279	299	300	1,174	1,175

Table 8: Variable Description

This table shows all variables, their definitions and data sources.

Variables	Description	Details and Source
CAAR	$\frac{1}{N} \sum_i^N R_{it} - (\hat{\alpha}_i + \hat{\beta}_i * R_{mt})$	CAAR is the cumulative average abnormal return calculated over a 3-day event window centred on the date of the news and using the market model. Source: Datastream (DS)
CashETR	$[TXPD_{t-2} / (PINC_{t-2} - DOPS_{t-2} - SITEMS_{t-2})]CIT_t$	Measure for tax avoidance: Cash ETR, calculated as taxes paid (WC04150) divided by pre-tax income (WC01401) less discontinued operations (WC04054) & extraordinary items (WC04225) for a period of three years. Set to missing if denominator ≤ 0 . Replaced by current income taxes (WC01451 less WC04199) if variable taxes paid is not available. We normalize the Cash-ETR with the local mandatory corporate income tax rate of the MNE's parent company in the year of the event. Source: Datastream (DS) / Worldscope (WC); OECD Tax Database (OECD)
SIZE	Natural log (<i>MV</i>)	Firm size, calculated as the natural logarithm of Market value (<i>MV</i>). Source: Datastream (DS) / Worldscope (WC)
ROA	$(PINC - SITEMS) / TA_{t-1}$	Return on Assets, calculated as pre-tax income less extraordinary income divided by lagged assets (WC02999). Source: Datastream (DS) / Worldscope (WC)
R&D	RD / TA_{t-1}	Research & Development, Research and Development expenses (WC01201) divided by lagged assets Set to 0 if missing.
Lev	LTD / TA_{t-1}	Leverage, calculated as long-term debt (WC03251) divided by lagged assets. Source: Datastream (DS) / Worldscope (WC)
Loss		Indicator variable, equal to 1 if negative pre-tax income (WC01401), and zero otherwise. Source: Datastream (DS) / Worldscope (WC)

Table 9: Cross-sectional analysis

This table presents results of estimating equation (5). The dependent variable is CAAR (Cumulative average abnormal return) over a three-day window centred on the event date. The S&P Global 1200 Index is our benchmark index for calculating CAAR following the market model. *Cash-ETR* is the measure for tax avoidance. *SIZE* represents the firm size, *ROA* the Return on Assets, *R&D* the Research & Development expenses and *Lev* the leverage and *loss* is an indicator variable set to one if negative pre-tax income is reported. Table 8 provides variable definitions. The number of firm-event observations depends on the available data for key variables used in the respective test. To avoid heteroscedasticity robust standard errors are used. *, **, *** indicate significance at 10%, 5% and 1% levels, respectively. Standard errors are in parentheses.

VARIABLES	(1) Overall	(2) EU	(3) USA	(4) Japan	(5) Rest
Cash-ETR	0.00171*** (0.000439)	0.00127** (0.000500)	0.00367** (0.00179)	-0.00116 (0.00201)	0.00181** (0.000733)
SIZE	-0.000350** (0.000146)	-3.25e-05 (0.000203)	-0.00137** (0.000608)	0.000881* (0.000521)	-0.00109*** (0.000320)
ROA	-0.00292* (0.00160)	-0.00512 (0.00400)	0.00561 (0.00828)	-0.00416 (0.0229)	-0.00298* (0.00168)
R&D	-0.0385*** (0.00809)	-0.0267** (0.0108)	-0.0399** (0.0170)	-0.0445 (0.0286)	-0.0428*** (0.0153)
Lev	0.00259 (0.00198)	0.00240 (0.00317)	0.00108 (0.00456)	0.0187 (0.0114)	0.00857* (0.00448)
Loss	0.00428*** (0.00147)	0.00607*** (0.00210)	0.00584 (0.00426)	-0.0137** (0.00557)	0.00617** (0.00263)
Constant	-0.000250 (0.00149)	-0.00268 (0.00177)	0.00441 (0.00566)	-0.00752 (0.00685)	0.00550 (0.00367)
Observations	23,566	8,063	4,958	4,136	6,409
R-squared	0.003	0.005	0.006	0.006	0.007

Table 10: Market reaction of domestic companies to OECD BEPS Action Plan events by geographic region

This table presents the Average Cumulative Abnormal Return (CAAR) of domestic companies for each event date. The sample is split in different geographic regions, namely the European Union, the United States, Japan and the rest of the OECD member states. CAR is calculated over a three-day window centred on the event date. The S&P Global 1200 Index is our benchmark index for calculating CAAR following the market model. Column (1) is the overall market reaction for the release of the Action Plan in July 2013. Column (2) presents the overall CAAR at the release of the Interim Report and column (3) at the release of the Final Report. Column (4) present the CAAR in the event window of the conclusion of the negotiation relating to the MLI. Additionally, the mean return across all events is shown in column (5). To avoid heteroscedasticity robust standard errors are used. *, **, *** indicate significance at 10%, 5% and 1% levels, respectively. Standard errors are in parentheses.

	(1) Action Plan (July 2013)	(2) Interim Report (Sep 2014)	(3) Final Report (Oct 2015)	(4) MLI (Nov 2016)	(5) Mean return across all events
Overall	0.00193* (0.00117)	-0.00862*** (0.00122)	0.0107 (0.0104)	-0.00430*** (0.00113)	-0.000203 (0.00270)
<i>Obs</i>	8,201	9,205	9,715	11,098	38,219
EU	0.00415* (0.00230)	-0.00281 (0.00291)	-0.00784*** (0.00243)	-0.00250** (0.00112)	-0.00264** (0.00109)
<i>Obs</i>	1,753	1,989	2,303	2,700	8,745
USA	-0.00439 (0.00334)	-0.0127*** (0.00352)	0.0581 (0.0415)	-0.00892** (0.00356)	0.00836 (0.0108)
<i>Obs</i>	2,061	2,444	2,436	2,502	9,443
JAP	-0.0115*** (0.00170)	-0.00711*** (0.00120)	-0.00871*** (0.00112)	0.00590** (0.00231)	-0.00509*** (0.000843)
<i>Obs</i>	1,845	1,885	2,043	2,098	7,871
Rest	0.0153*** (0.00168)	-0.0101*** (0.00131)	-0.000690 (0.00177)	-0.00819*** (0.00177)	-0.00193** (0.000845)
<i>Obs</i>	2,541	2,887	2,933	3,796	12,157

Table 11: Market reaction of MNEs with alternative measure of Tax Avoidance

This table presents the Average Cumulative Abnormal Return (CAAR) for every MNE divided in two groups within the highest and the lowest quartile of the three-year average of the three year tax avoidance measure (TaxAvoid). Loss firms are excluded. If the variable cash taxes paid is not available, we replace the measure with the current tax expense. Because of the global sample that includes observations from countries with different corporate income tax regimes, taxes paid must be compared with “unmanaged taxes” at the home-country statutory tax rate to cross-sectionally measure the amount of taxes avoided (*Atwood et al*). The first group within the highest quartile of the Atwood measure (more tax avoiding companies) and the second group within the lowest quartile of the Atwood measure (less tax avoiding companies). To avoid heteroscedasticity robust standard errors are used. *, **, *** indicate significance at 10%, 5% and 1% levels, respectively. Standard errors are in parentheses.

	(1) Action Plan (July 2013)		(2) Interim Report (Sep 2014)		(3) Final Report (Oct 2015)		(4) MLI (Nov 2016)		(5) Mean return across all events	
	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding	non tax avoiding	tax avoiding
Overall	0.00170 (0.00125)	-0.00259** (0.00128)	-0.00241* (0.00128)	-0.00545*** (0.00128)	0.00640*** (0.00185)	-0.00356** (0.00159)	-0.00188 (0.00286)	-0.00439** (0.00199)	0.000970 (0.000969)	-0.00424*** (0.000780)
Obs	1,137	1,136	1,176	1,175	1,148	1,147	1,166	1,165	4,625	4,625