Tax Avoidance Regulations and Stock Market Responses

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Abstract

In this paper we examine the effects of tax avoidance regulations on stock returns and systematic risk exposure of multinational corporations (MNCs). We use the introduction of the worldwide debt cap reform in 2010 in the UK as a quasi-natural experiment that limited the extent of profit shifting for a group of multinational firms. We find that MNCs affected by the reform have higher stock market returns and lower systematic risk exposure than unaffected MNCs after the reform. This result is driven by MNCs headquartered in countries with a higher control of corruption. Further, we document a heterogeneous response between MNCs headquartered in the UK, and non-UK ones. Previous literature shows that MNCs respond to tax avoidance regulations by moving assets to minimize the regulatory effects on their overall tax payments. Our results suggest that stock market investors perceive such a shift as a signal of an MNC's tax planning competency.

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1 Introduction

In recent years, multinational tax avoidance has been on the top of policy agenda. One particularly popular form of tax avoidance for multi-national corporations (MNCs) is allocating debt across different tax jurisdiction, which lowers their worldwide tax burden. Countries have been introducing various anti-tax avoidance measures to curb this particular form of profit shifting. Recent empirical work examines how these restrictions affect various firm level outcomes. However, we have yet to learn how stock market reacts to these regulations. In this paper, we examine the stock markets' response to the anti-debt shifting regulations. In particular, we focus on an MNC's stock price and systematic risk exposure to a particular national market the government of which attempts to reduce debt shifting. This allows us to shed light on how tax policy affects capital markets.

We use the introduction of Worldwide Debt Cap rule (WDC) in the UK in 2010 as a quasi-natural experiment. This measure aims to tackle debt shifting of MNCs by limiting the amount of debt that is allowed to be held in the UK relative to the total worldwide debt of an MNC. In particular, UK net debt that is above the maximum level of 75% of the MNC's group worldwide debt was disallowed for tax deductions. This rule created a group of MNCs that were affected by the reform, i.e. those with above 75% debt levels in the UK, and a group of MNCs that were not affected by the reform. We use this setting to construct a treatment group - the affected MNCs and the control group - MNCs not affected by the reform. We rely on difference-in-differences (DID) methodology to draw causal inference for stock market by comparing the treatment and control group before and after the reform.

Previous evidence from the literature suggests that firms respond to anti-tax avoidance regulations by moving their profits and operations abroad. In particular, Bilicka et al. (2020) show that the UK debt cap reform induced MNCs to reduce their debt holdings in the UK and move them abroad. It also caused firms to move operations away from the UK towards

their foreign subsidiaries, especially those located in high tax countries. This suggests that firms offset the potential effects of the WDC by moving their activities away from a country that regulated profit shifting. This also suggests that the additional revenue collected by tax authorities from those measures is smaller than expected, absent this behavioural response. A second paper related to this research is Serrato (2018) who shows that the repeal of a tax code that allowed US MNCs to exclude income from Puerto Rico from US corporate taxes led them to shift investment and employment away from the US.

In this paper we ask a question of what these anti-tax avoidance measures mean for investors. Tax avoidance, in general, may increase cash flow for the firm as it allows it to pay less tax. Hence, anti-tax avoidance rule would cause firm value to decrease, because it limits tax-saving and reduces after-tax income for equity holder. However, tax avoidance also provides means to conceal unfavorable information and questionable corporate practice. From this point of view, anti-tax avoidance rule can curb the agency cost by limiting managerial rent seeking activities and enhance the information transparency. Consequently, anti-tax avoidance regulation should increase firm value. Thus, it is an empirical question as to what a regulation that limits firm's ability to shift profits will do to stock market.

On one hand, limiting MNCs ability to shift profits to minimize their overall tax liability and increase their cash flow may have negative effects on firm value. If firms' price in the equilibrium is an optimal one and this firm engages in profit shifting, then a regulation that limits the scope of the firm to do so, will likely negatively affect the firms price. This may happen because of a negative cash flow shock. On the other hand, firms affected by the WDC have reduced their debt holding in the UK and moved operations away without suffering an increase in their overall liabilities (Bilicka et al. (2020)). This suggest that the cash flow effect may not be that important for the affected MNCs. Instead, their debt and capital are likely very mobile and thus they are able to respond quickly to regulations adversely affecting their operations and tax planning strategies. This behaviour may be positively rewarded by

the investors by increasing firm value for firms that effectively and efficiently moved their operations in response to the anti-tax avoidance regulation. In addition, if the concern with tax avoidance practices was concealment of unfavourable information, by efficiently responding to the anti-tax avoidance reform, the firm is revealing its type. Empirically, Desai and Dharmapala (2009) find that, in general, there is no relationship between tax avoidance and firm value, but a positive relation emerges for firms with high institutional ownership. Hanlon and Slemrod (2009) examine how stock market reacts to news that a firm is involved in tax shelters, and find that markets reacts negatively, suggesting investors' concerns that tax avoidance behaviors may signal performance manipulation. However, the negative reaction is less pronounced, when firms are better governed.

To examine the importance of anti-tax avoidance regulations for stock market responses of the firm, we analyze the following stock market measures for MNCs: average monthly returns over a 3-year period, 3-year buy-and-hold returns, annual raw returns and abnormal returns, and systematic risk exposures, all measured both prior to and post the WDC reform.

First, we find that affected firm's buy-and-hold 3-year returns and average monthly returns over a 3-year window increased following the WDC. The results still hold when we consider the annual raw returns and abnormal returns, even after controlling for firm size, stock return volatility, and MNC fixed effects and year fixed effects. Note that previous studies suggest that MNCs have shifted debt and real operations out of the UK to minimize the effect of the reform on their tax payments and operations, which signals these MNCs' competency in tax and financial planning while also indicating tax avoidance and potentially higher risk. Our findings that firms that have reacted to the reform by shifting profits, debt and operations abroad are also the ones that experience a higher subsequent stock return is consistent with the view that investors recognized the positive effect of the tax planning competency on future cash flows and rewarded such competency. We find that it is not only the UK market that rewards this behaviour, but abnormal returns increase in the US and

Worldwide markets too. Our results also suggest that the positive stock market reaction for the affected firms is primarily driven by MNCs headquartered in countries with higher level of corruption control. This is consistent with the hypothesis that these MNCs are more likely better governed and less likely to be subject to the downside effects of aggressive tax avoidance behaviors.

Second, we find that the UK market betas of the firms affected by the WDC have become significantly smaller. This suggests that these firms are now perceived by investors as investment with less systematic risk exposure to the UK stock market. What is interesting is that betas for World and US markets have declined as well. Hence, investors perceive these firms to have less systematic risk exposure to US and Worldwide markets too.

An alternative explanation for the lower beta and higher stock return on affected MNCs post WDC is that the high level of debt in the UK before the WDC may have been used to facilitate manager's rent seeking behaviors but not to minimize tax payment. It is plausible that subsidiaries of MNCs operating in the UK were over leveraged before the WDC, as managers had used the tax-avoidance motivation to disguise their rent seeking activities. Hence, the WDC fixed the agency problem, leading to reduced leveraged (i.e., lower beta) and increased firm value (higher return). However, this argument is inconsistent with Bilicka et al. (2020), who show that MNCs can circumvent the WDC and hence the degree of tax avoidance is not changed. Further, if the agency story is true, we would expect that the positive effect of WDC is more pronounced for MNCs with poor corporate governance, and for MNCs headquartered in the UK (because of home bias). However, we find exactly the opposite for corporate governance.

We also document an important heterogeneity between UK and non-UK headquartered firms in how their capital markets react to the reform. We find that the UK firms have higher returns, but no change in risk exposure. In turn, non-UK firms have no change in returns, but lower betas. These results suggest that the difference in mechanisms through

which the WDC has affected the MNCs between the local firms and the non-local ones is worth further investigation.

While a traditional view of corporate tax avoidance suggests that shareholder value should increase with tax avoidance activity, literature provides more nuanced predictions. Desai and Hines Jr (2002) study corporate expatriations (i.e., transactions where U.S. firms invert their corporate structure so that a subsidiary in a tax haven becomes the parent entity) and find that markets often react negatively to U.S. firms' announcing such moves. Desai et al. (2007) study an episode of increased tax enforcement in Russia and show that these enforcement actions are associated with positive market reactions. Desai and Dharmapala (2009) show that impact of tax avoidance on shareholder value is a function of corporate governance. This is because, while tax avoidance per se should increase the after-tax value of the firm, this effect is potentially offset, particularly in poorly governed firms, by the increased opportunities for rent diversion provided by tax shelters. Kim et al. (2011) further extend this agency perspective and show that tax avoidance facilitates managerial rent extraction and bad news hoarding activities and hence increase firms' crash risk. In turn, Goh et al. (2016) show negative relation between tax avoidance and cost of equity arguing equity investors generally require a lower expected rate of return due to the positive cash flow effects of corporate tax avoidance. Our work adds to this literature by documenting new evidence regarding the market reaction to an anti-tax avoidance regulation.

The rest of the paper is structured as follows. Section 2 provides the policy background. Section 3 discusses data and our empirical strategies. Section 4 presents the results and Section 5 provides a discussion of the preliminary results.

2 Policy Background

In recent years, the OECD has recommended to use the "worldwide approach" to supplement the existing anti-tax avoidance polices for debt shifting, such as thin capitalization rules. The worldwide approach evaluates the MNCs' allocation of debt across affiliates by comparing the amount of debt located in each host country to some worldwide consolidated benchmark, such as the MNCs' worldwide debt. These rules may be harder to circumvent, as doing so requires MNCs to manipulate the group level consolidated debt.

In January 2010, the UK tax authority (the HMRC) introduced the "worldwide debt cap" (WDC) to restrict the generous tax deductions for financing expenses enjoyed by MNCs. The rule was an outcome of a long consultation that started in June 2007. The HMRC's aim was that the UK should not bear interest expenses that, in aggregate, exceed the amount of interest borne by an MNC as a whole. The WDC was part of the July 2009 Finance Act and it was partly motivated by the 2009 territorial tax system reform in the UK. After the territorial tax system reform, the HMRC needed to compensate tax revenue losses, as it no longer taxed dividends repatriated by MNCs under the new territorial tax regime. Raising tax revenue by implementing the WDC is one such measure.

The WDC was applicable for periods beginning on or after January 1 2010 and up until April 1 2017. The WDC applies to qualifying MNCs that have a corporate tax residence in the UK, except those in the financial sector. A qualifying MNC is one that has more than 250 employees, above 50m turnover and/or above 43m balance sheet total assets. To apply the rule, each MNC first needs to calculate its UK net debt, which is aggregated across its all UK relevant subsidiaries. Next, a gateway test based on the ratio of the MNC's UK net debt to its worldwide gross debt is conducted. If the gateway ratio exceeds 75%, interest deduction is disallowed for the exceeding level of interest expenses. The WDC is not optional. On April 1st 2017 the UK modified the WDC; the worldwide debt denominator

was replaced by EBITDA.

The UK net debt held by each UK subsidiary is the difference between relevant liabilities and relevant assets. The type of borrowings that would be treated as relevant liabilities includes short-term loans, overdrafts and long-term debt. Trade credit and liabilities in the form of share capital, such as preference shares, are not treated as relevant liabilities for the purposes of the gateway test, even if they are accounted for in financial liabilities. Relevant assets include cash and cash equivalents, lending, investment in government or company securities, and net investment in financial leases. To calculate the numerator of the gateway ratio, the MNC needs to aggregate the UK net debt across all relevant UK subsidiaries, which are 75% or more owned by the MNC. The denominator of the gateway ratio, the MNC's worldwide gross debt, is the consolidated liabilities of the worldwide group. While the UK net debt includes both external and internal debt, the worldwide gross debt only considers the MNC's external debt.

3 Data and Empirical Strategy

3.1 Sample Construction

To examine the stock market reaction to WDC, we collect data for all MNCs that had at least one subsidiary in the UK in 2010. For each of those MNCs we obtain data for their UK subsidiaries to construct the gateway test ratios. Several data sources are utilized. We use Osiris by the Bureau van Dijk (BvD) to extract a sample of MNCs. We then use the 2005-2017 CDs of Osiris to extract subsidiaries of those MNCs year by year. We focus only on subsidiaries which are 50% or more owned and thus effectively controlled. For the subsidiaries located in the UK, we extract financial information from FAME data to construct the gateway ratios following the HMRC methodology. We use the subsidiary level data only

to construct the gateway ratios.

We obtain consolidated financial data for the MNC groups from Osiris. This allows us to construct group-level variables such as group size, market capitalization etc. We further use Osiris to collect information on firm prices for listed parent firms of each MNC. We collect the daily stock return data from DataStream. We also collect the historical daily data on the following broad indices: MSCI World, FTSE 100, FTSE All Share, NYSE, and NIKKEI 225.

We calculate the gateway ratio, as outlined by the HMRC, for MNCs in our sample. An MNC failed the gateway test, if its gateway ratio exceeded 75% in 2010. Note that both the numerator and the denominator in the gateway ratio are two-year averages. Hence, the 2010 gateway ratio takes into account the 2009 financial data for the MNC. These MNCs form our treatment group.

Combining these data sources together, our benchmark sample covers financial and stock market data for the MNCs, at the group level during the period 2006 – 2013. In total, 197 MNCs in our sample failed the gateway test; MNCs that did not fail the gateway test form our control group.

3.2 Stock Market Variables

In our baseline analysis, we use the end-of-month stock price for listed parent firm of each MNC from 2006 to 2013 to construct the monthly stock return of the listed parent firm.[1] We construct the UK market return proxied by the FTSE 100 index return over the same time period in the same way. For the baseline results, we construct the 3-year buy-and-hold return[2] and average monthly return for each firm in the sample over the 3-year windows both

[1]Technically, this is the monthly capital gain yield, instead of the real monthly return. We adopt this measure as a raw proxy in our preliminary analysis, and plan to obtain access to better stock return data for further analysis.

[2]Again, this is technically the percent capital gain, if the stock is purchased at the beginning of the 3-year period and sold at the end of it.

prior to and post the implementation of the reform (2007 - 2009, 2011 - 2013). As a control variable, we calculate the standard deviation for each MNC observation using monthly stock returns over the two 3-year periods before and after the event as the stock return volatility.

We then construct the raw annual returns and abnormal annual returns of each listed parent firm over the same time windows. For the abnormal return, we take the raw annual rate of return for each individual MNC and different broad market indices, and apply the corresponding betas estimated with daily returns over the previous year. Using daily stock returns, we calculate the standard deviation as the annual volatility measure for each firm-year combination. As Kim et al. (2011) find that a company's tax avoidance behavior can affect its future crash risk, we also include the crash risk as a control variable by calculating the negative skewness as the annual crash risk measure following Chen et al. (2001),

$$CrashRisk_{it} = -[n(n-1)^{3/2} \sum W_{i\tau}^3]/[(n-1)(n-2)(\sum W_{i\tau}^2)^{3/2}]$$

where $W_{i\tau}$ is the firm-specific weekly return for firm i in week τ, and n is number of available weekly returns in year t.

For systematic market risk exposures, we estimate the CAPM betas on five broad market indices: MSCI World, FTSE All Share, FTSE 100, NYSE, and NIKKEI 225 for each firm-year combination with daily data.

3.3 Empirical Approach

We use the difference-in-differences approach to investigate the stock market responses of MNCs to the 2010 UK worldwide debt cap. MNCs that failed the gateway test in 2010 are in our treated group, while those that did not fail the test are in the control group. We use the following general specification:

$$Y_{it} = \alpha + \beta Affected_i \times Post_t + \gamma X_{it}^{'} + \eta_t + \delta_i + \epsilon_{it} \quad (1)$$

where Y_{it} is one of the stock market outcome variables at the MNC level. In our baseline results, we consider the 3-year buy-and-hold return and average monthly return over a 3-year window. Each firm has 1 observation before (2007 - 2009) and after (2011 - 2013) the implementation of the WDC. Then we consider the raw and abnormal annual return over the same 3-year windows. For the systematic risk exposure, we consider the annual betas prior to and post the WDC estimated with daily data.

$Affected_i$ is a dummy variable that equals one, if the MNC i failed the gateway test in 2010, and zero otherwise; $Post_t$ is a dummy variable that equals one from 2010 onward; $X_{it}^{'}$ is a set of control variables, such as firm size and stock return volatility; η_t is the year fixed effect, δ_i is the firm fixed effect, and ϵ_{it} is the error term. The parameter of interest is β, which captures the effect of the WDC reform on our stock market variables of interest.

4 Empirical Findings

4.1 Descriptive Statistics

In this subsection we provide the summary statistics for the variables in our empirical analysis. Table 1 provides the summary statistics for our baseline analysis split by the control and treatment groups. Note that in this analysis each MNC has one observation before and one after the event. The 197 affected MNCs yield 324 observations, while there are 4,209 observations in the control group. The MNCs in the control group are in general much larger. At the same time, the affected firms earn relatively smaller average monthly returns. While firms in the treatment group demonstrate much smaller cross-sectional and time-series volatility, they earn higher 3-year buy-and-hold returns.

Table 2 provides the descriptive information for all the annual variables in our analysis. We estimated five systematic risk exposure measures against different broad market indices. $MktCap$ is the market capitalization in million dollars. Volatility is calculated using daily returns. Crash Risk measures (against different broad market indices) are negative skewness estimated following Chen et al. (2001). ETR is the effective tax rate estimated by dividing tax liability by pre-tax profit.

4.2 Stock market returns

In this subsection we investigate the effect of WDC on stock market returns of the affected MNCs. We first conduct our baseline analysis to grasp the general picture of how the WDC reform affects MNCs' stock market performance by examining the 3-year buy-and-hold return and average monthly return before and after WDC. Then we conduct the analysis of annual raw returns and abnormal returns.

4.2.1 Baseline results

We present the results on the effects of the WDC on annual stock returns in Table 3. The dependent variable in Models 1 and 2 is the 3-year buy-and-hold return prior to and post 2010, while in Models 3 and 4 it is the average monthly return over the same 3-year periods. We control for firm size and stock return volatility over the same windows in Models 2 and 4.

We find that the difference-in-differences coefficients are statistically significantly positive across all specifications. This suggests that the MNCs affected by WDC significantly outperform those in the control group over the 3-year window after the reform, even after controlling for firm size and stock return volatility.

4.2.2 Raw annual rate of return

In this subsection we present the Diff-in-diff analysis of the annual returns of the MNCs before and after the implementation of the WDC. Table 4 presents the regression results of raw annual rate of return of the MNCs over the 3-year windows prior to and post WDC. In Models 2 and 4 we control for market capitalization, book to market ratio, and stock return volatility, while in Models 3 and 4 we further control for the firm and year fixed effects. We find that the Diff-in-diff coefficients are positive across all specifications, and mostly statistically significant. Generally, the affected MNCs are associated with higher raw rate of return after the WDC reform.

4.2.3 Abnormal annual rate of Returns

In this subsection, we examine the abnormal return of the affected MNCs before and after the WDC reform. Table 5 presents our baseline results without control variables for different market indices. Affected MNCs, in general, see higher abnormal returns estimated against all three broad market indices presented here, even after controlling for firm and year fixed effects.

Next, we investigate the heterogeneity between UK and non-UK headquartered MNCs. To do so, we split the sample by whether the MNC is headquartered in UK or not. We report the results in Table 6. We control for market capitalization, Book to Market Ratio, volatility, effective tax rate (ETR) and crash risk. All abnormal returns reported in this table are estimated against the UK market index FTSE All Share. We find that the statistical significance of the Diff-in-diff coefficient is reduced by incorporating other explanatory variables. However, in the subsample of MNCs headquartered in the UK, we still find significant positive effect of the WDC on affected MNCs' post reform abnormal returns. In contrast, non-UK MNCs that are affected by WDC do not see any change in abnormal returns after

the reform.

We further investigate the heterogeneity in WDC's effect on MNCs' abnormal returns by splitting the sample according to the corporate governance quality in the MNC's home country. We adopt a country's control of corruption (CCE) as a proxy for corporate governance quality. Table 7 presents the results. The abnormal returns reported here are estimated against the global index MSCI World and UK market index FTSE All Share.

In Table 7, we find that the positive effect of WDC on abnormal returns only exists in the subsample of MNCs that are more likely to be better governed. We show that poorly governed MNCs that are affected by WDC do not experience similarly statistically significant growth in abnormal returns.

4.3 Systematic risk exposure to stock markets

In this subsection we present the results on how the MNC's systematic risk exposure to several stock markets: World, UK, UK FTSE100, US and Japan has evolved around the implementation of the WDC reform. For each MNC, we estimate its betas using daily returns on individual stock and broad market indices for each of the 3 years prior to WDC (2007, 2008, and 2009), and after (2011, 2012, and 2013). Then we conduct Diff-in-diff analysis on these betas. We report the baseline results, controlling for firm and year fixed effects, for different stock markets in Table 8. We find that the systematic risk exposure of the affected MNCs to all but Japan stock market has decreased after the WDC.

As WDC happened in the UK, we are particularly interested in the systematic risk exposure to the UK stock market, and whether UK and non-UK firms react to this reform differently. Hence, we split the sample based on whether the parent firm is headquartered in UK, and report the results in Table 9. We find that post the reform for the UK headquartered MNCs there is no significant change in their systematic risk exposure to the UK stock market. In turn, the reduction in the systematic risk exposure, is entirely driven by the non-UK

MNCs, which experience a large decline in betas.

5 Discussion

Effective tax avoidance generally increases cash flow for the firm as it allows it to pay less tax. Hence, anti-tax avoidance rule can cause firm value to decrease, because it limits tax-saving and reduces after-tax income for equity holder. However, tax avoidance also provides means to conceal unfavorable information and questionable corporate practice. From this point of view, anti-tax avoidance rule can curb the agency cost by limiting managerial rent seeking activities and enhance the information transparency. Consequently, anti-tax avoidance regulation should increase firm value. Thus, it is an empirical question as to what a regulation that limits firm's ability to shift profits will do to stock market, and the previous literature documents mixed evidence (Kim et al. (2011) and Desai and Dharmapala (2009)).

We find that over the 3-year post WDC window, the listed parent firms of the affected MNCs see higher stock returns. Table 3 suggests that the 3-year buy-and-hold return of the affected MNCs are significantly higher, even after controlling for firm size and stock return volatility. The average monthly return over the 3-year window for the affected firms is on average more than 1% higher relative to the unaffected firms after the WDC. Similar results hold for the annual return analysis as suggested in Table 4. After the WDC, the affected MNCs experienced an raw annual return of more than 10% higher relative to the unaffected firms. These results are consistent with the hypothesis that the debt shifting behavior of the affected MNCs signals that they are competent in cash flow increasing tax planning activities.

Bilicka et al. (2020) show that the worldwide debt of the affected MNCs increased, while their net UK debt decreased. Hence, we expect a decline in UK beta. This is because beta captures the co-movement between the firm's stock price and the UK equity market. Since

affected MNCs shrank their operations in UK, it leads to reduced co-movement with the UK equity market. Consistent with our hypothesis, we find that the betas estimated with stock and UK market returns post the WDC are smaller in magnitude. This suggests that the affected firms were less exposed to UK market systematic risk after the reform. This can potentially be caused by the fact that they moved their operations out of UK in response to the WDC.

6 Concluding Remarks and Future Work

In this paper we examine how stock market reacts to a change in anti-tax avoidance regulations. We use the introduction of the worldwide debt cap reform in 2010 in the UK as a quasi-natural experiment that limited the extent of profit shifting for a group of multinational corporations (MNCs), and examine its effects on stock returns and systematic risk exposure of MNCs. We find that multinationals affected by the reform are associated with higher subsequent returns and lower market risk exposure than unaffected MNCs after the reform. UK MNCs that are affected experience higher abnormal returns, but no significant change in UK market risk exposures, while non-UK firms experience the opposite. The positive effect of WDC on MNCs' abnormal return is primarily driven by the well governed firms.

Considering the evidence that multinational firms, especially the non-UK firms, move debt and real operations away from the UK in response to the reform thereby minimizing the effects of anti-tax avoidance regulation on their overall tax payments, our results are consistent with the view that the observed debt shifting behavior signals the MNCs' competency to perform tax planning which has a positive effect on future cash flows, and has been, overtime, gradually recognized and rewarded by investors.

In our future work, we are working on obtaining firm level corporate governance data. We can then investigate whether the better governed MNCs or MNCs with better reputation see

more positive stock market reaction, as shown by our current evidence based on country level corporate governance quality measures. This will allow us to also examine more carefully whether the potential downside of engaging in tax avoidance activities outweighs the upside. We are also going to study other tax avoidance measures, e.g., access to tax haven in the context of WDC.

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Table 1: Summary statistics: baseline analysis.

Variable	Obs	Mean	Std. Dev.
Panel 1:	Affected MNCs		
3-year buy-and-hold return	324	0.146	1.00
Average monthly return	324	0.005	0.023
Total Assets	322	2,992,110	1.85e+07
Volatility	324	0.145	0.080
Panel 2:	Unaffected MNCs		
3-year buy-and-hold return	4,209	0.114	0.935
Average monthly return	4,209	0.014	0.228
Total Asset	4,027	9,475,059	3.16e+07
Volatility	4,209	0.179	1.354

Note: Summary statistics for variables in the baseline analysis. Here, we use 3 years before and 3 years after the reform. *Total Assets* is in thousand dollars. *Volatility* is estimated over the matching 3-year window using monthly stock returns.

Table 2: Summary statistics: annual variables.

	Obs	Mean	Std. Dev.
Annual Return	13,348	0.139	1.982
Abnormal Return (World)	13,099	0.115	1.975
Abnormal Return (UK)	13,099	0.124	1.980
Beta (World)	14,294	0.761	0.739
Beta (FTSE100)	14,294	0.583	0.542
Beta (FTSE All Share)	14,294	0.611	0.556
Beta (NYSE)	14,294	0.549	0.653
Beta (NIKKEI)	14,294	0.324	0.444
Mkt Cap	6,781	9,082	28,748
Volatility	14,294	3.299	3.170
Crash Risk (World)	14,099	0.00183	0.816
Crash Risk (UK)	14,099	0.00718	0.809
Assets	13,665	8.455e+06	2.988e+07
ETR	7,247	0.0407	0.205

Note: Summary statistics for all the annual variables in our analysis 2007 - 2013. Abnormal returns and betas are estimated using CAPM against different broad market indices. *Mkt Cap* is the market capitalization in million dollars. *Volatility* is estimated over the matching annual window using daily returns. *Crash Risk* are negative skewness estimated following Chen et al. (2001) against different broad market indices. ETR is the effective tax rate estimated by dividing tax liability by pre-tax profit. *Assets* is in thousand dollars.

Table 3: Baseline results: annual stock market returns.

	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
Diff-in-Diff	0.42302***	0.43636***	0.01809**	0.01454***
	(4.27)	(4.37)	(2.46)	(5.60)
Affected	-0.18506***	-0.18758***	-0.01848***	-0.01062***
	(-4.23)	(-4.28)	(-3.83)	(-5.64)
Post	0.56495***	0.56754***	0.00190	0.01483***
	(20.97)	(20.59)	(0.27)	(22.56)
Total Assets		-0.00000*		0.00000***
		(-1.94)		(4.03)
Volatility		0.10334***		0.16771***
		(2.73)		(98.79)
Constant	-0.17788***	-0.19209***	0.01328***	-0.02373***
	(-13.78)	(-13.98)	(2.92)	(-45.63)
Observations	4,533	4,349	4,533	4,349
R-squared	0.104	0.121	0.000	0.991
Firm FEs	NO	NO	NO	NO
Year FEs	NO	NO	NO	NO

Note: ***, **, * denote significance at the 1%, 5%, and 10% level, respectively. Robust standard errors in parentheses. The dependent variable in Models 1 and 2 is the 3-year buy-and-hold return prior to and post 2010, while in Models 3 and 4 it is the average monthly return over the same 3-year periods. *Total Assets* is in thousand dollars. *Volatility* is estimated over the matching 3-year window using monthly stock returns.

Table 4: Raw annual returns.

	(1) Model1	(2) Model2	(3) Model3	(4) Model4
Diff-in-Diff	0.14890**	0.15178	0.14625***	0.18182*
	(2.51)	(1.57)	(2.58)	(1.76)
Affected	-0.08755**	-0.05813		
	(-2.08)	(-0.79)		
Post	0.04417	-0.00493	0.04185	-0.02580
	(1.22)	(-0.09)	(1.20)	(-0.51)
Mkt Cap		0.00000		-0.00000
		(0.31)		(-0.29)
BM		0.00024		0.00038**
		(1.61)		(2.08)
Volatility		-0.03547**		-0.07026**
		(-2.44)		(-2.56)
Constant	0.11720***	-0.17338	0.11233***	-0.31039
	(6.05)	(-0.72)	(6.10)	(-1.07)
Observations	13,348	6,678	13,348	6,678
R-squared	0.000	0.128	0.000	0.191
Number of MNCs	2,356	1,201	2,356	1,201
Firm FEs	NO	NO	YES	YES
Year FEs	NO	NO	YES	YES

Note: ***, **, * denote significance at the 1%, 5%, and 10% level, respectively. Two-way firm and year clustered standard errors in parentheses. The dependent variable is the raw annual return. *Mkt Cap* is in million dollars. *BM* is the book to market ratio. *Volatility* is estimated over each matching 1-year window using daily stock returns.

Table 5: Baseline results: abnormal returns

	(1) World	(2) UK	(3) US	(4) World	(5) UK	(6) US
Diff-in-Diff	0.15574***	0.14939***	0.15983***	0.14469*	0.13645**	0.14875***
	(2.73)	(2.59)	(2.74)	(2.11)	(2.48)	(2.68)
Affected	-0.07818**	-0.07883**	-0.08656**			
	(-2.00)	(-1.97)	(-2.12)			
Post	-0.06176*	-0.00313	-0.03980	-0.06285	-0.00431	-0.04116
	(-1.70)	(-0.09)	(-1.09)	(-0.34)	(-0.12)	(-1.16)
Constant	0.14685***	0.12612***	0.13649***	0.14235	0.12168***	0.13153***
	(7.70)	(6.56)	(7.02)	(0.85)	(6.65)	(7.13)
Observations	13,099	13,099	13,099	13,099	13,099	13,099
R-squared	0.000	0.000	0.000	0.000	0.000	0.000
Number of MNCs	2,336	2,336	2,336	2,336	2,336	2,336
Firm FEs	NO	NO	NO	YES	YES	YES
Year FEs	NO	NO	NO	YES	YES	YES

Note: ***, **, * denote significance at the 1%, 5%, and 10% level, respectively. Robust standard errors in parentheses for Models 1, 2, and 3. Two-way firm and year clustered standard errors for Models 4, 5, and 6. The dependent variable is the abnormal annual rate of return against different broad market indices.

Table 6: Abnormal returns: parent level heterogeneity.

	(1) All MNCs	(2) All MNCs	(3) UK MNCs	(4) Non-UK MNCs
Diff-in-Diff	0.13742	0.15986	0.14515**	0.03827
	(1.40)	(1.50)	(1.99)	(0.33)
Affected	-0.04754			
	(-0.63)			
Post	-0.05421	-0.07502	-0.02123	-0.12119**
	(-1.00)	(-1.52)	(-0.50)	(-2.00)
Mkt Cap	0.00000	0.00000	-0.00001***	0.00001
	(0.47)	(0.22)	(-2.75)	(1.20)
BM	0.00024	0.00038**	0.00009***	0.00078**
	(1.58)	(2.03)	(7.05)	(2.33)
Volatility	-0.03741*	-0.07506**	-0.02857**	-0.14144**
	(-1.96)	(-2.14)	(-2.11)	(-2.06)
ETR	-0.18667	-0.08154	-0.12736	-0.19955
	(-1.36)	(-0.75)	(-1.34)	(-1.08)
Crash Risk	-0.01415	0.01093	-0.07520***	0.07836
	(-0.39)	(0.23)	(-4.03)	(1.01)
Constant	-0.15701	-0.29736	0.02775	-0.78174
	(-0.70)	(-1.12)	(0.43)	(-1.61)
Observations	6,461	6,461	1,518	4,943
R-squared	0.128	0.188	0.310	0.341
Number of MNCs	1,182	1,182	289	893
Firm FEs	NO	YES	YES	YES
Year FEs	NO	YES	YES	YES

Note: ***, **, * denote significance at the 1%, 5%, and 10% level, respectively. Robust standard errors in parentheses for the first 3 models. Two-way firm and year clustered standard errors for the last 3. The dependent variable is the abnormal annual rate of return. *Mkt Cap* is in milliond dollars. *BM* is the book to market ratio *Volatility* is estimated over each matching 1-year window using daily stock returns.

Table 7: Abnormal returns: corporate governance heterogeneity.

	(1) High CCE UK	(2) High CCE World	(3) Low CCE UK	(4) Low CCE World
Diff-in-Diff	0.15917**	0.17022***	0.14014	0.10587
	(2.36)	(2.58)	(1.12)	(0.81)
Post	-0.10867***	-0.13291***	-0.03036	-0.06485
	(-4.08)	(-4.97)	(-0.32)	(-0.74)
Mkt Cap	-0.00000***	-0.00000***	0.00001	0.00001
	(-3.86)	(-2.87)	(1.23)	(1.31)
BM	0.00009***	0.00009***	0.00103**	0.00102**
	(7.45)	(6.90)	(2.53)	(2.50)
Volatility	-0.03784***	-0.00727	-0.20822*	-0.16719
	(-3.74)	(-0.74)	(-1.92)	(-1.62)
Crash Risk UK	-0.08180***		0.10962	
	(-5.49)		(1.33)	
ETR	-0.04107	-0.05082	-0.47353*	-0.49189*
	(-0.69)	(-0.86)	(-1.67)	(-1.71)
Crash Risk World		-0.05855***		0.10949
		(-4.16)		(1.50)
Constant	0.09833**	0.00424	-0.83723	-0.93743*
	(2.12)	(0.09)	(-1.45)	(-1.65)
Observations	2,932	2,932	3,492	3,492
R-squared	0.235	0.224	0.441	0.436
Number of MNCs	547	547	619	619
Firm FEs	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES

Note: ***, **, * denote significance at the 1%, 5%, and 10% level, respectively. Robust standard errors in parentheses for the first 3 models. Two-way firm and year clustered standard errors for the last 3. The dependent variable is the abnormal annual rate of return. *Mkt Cap* is in milliond dollars. *BM* is the book to market ratio. *Volatility* is estimated over each matching 1-year window using daily stock returns.

Table 8: Systematic risk exposure: different stock markets.

	(1) World	(2) UK	(3) UK FTSE100	(4) US	(5) Japan
Diff-in-Diff	-0.09398***	-0.08904**	-0.09018**	-0.07438**	-0.00896
	(-2.62)	(-2.30)	(-2.34)	(-2.48)	(-0.37)
Post	-0.00846	0.02710***	0.02850***	0.10040***	-0.04739***
	(-0.90)	(3.95)	(4.29)	(13.15)	(-9.12)
Constant	0.76875***	0.60090***	0.57222***	0.50158***	0.34839***
	(129.61)	(128.43)	(125.77)	(108.40)	(104.77)
Observations	14,294	14,294	14,294	14,294	14,294
R-squared	0.001	0.001	0.002	0.012	0.006
Number of MNCs	2,448	2,448	2,448	2,448	2,448
Year & Firm FEs	YES	YES	YES	YES	YES

Note: ***, **, * denote significance at the 1%, 5%, and 10% level, respectively. Two-way firm and year clustered standard errors in parentheses. The dependent variable is beta.

Table 9: Systematic risk exposure to UK stock market: parent level heterogeneity.

	(1) UK MNCs	(2) Non-UK MNCs
Diff-in-Diff	-0.02301	-0.17584**
	(-0.47)	(-2.12)
Post	-0.00834	0.03586***
	(-0.35)	(5.61)
Assets	-0.00000**	0.00000
	(-2.55)	(0.20)
Constant	0.53355***	0.62226***
	(41.14)	(120.83)
Observations	3,461	10,204
R-squared	0.000	0.004
Number of MNCs	617	1,747
Firm FEs	YES	YES
Year FEs	YES	YES

Note: ***, **, * denote significance at the 1%, 5%, and 10% level, respectively. Two-way firm and year clustered standard errors in parentheses.