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FDI, liquidity, and political uncertainty: A global analysis

Marvin Jahn[1] · **Paul Stricker**[2]

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Abstract
Uncertainty incentivizes investors to wait-and-see and to hold back their investments. This paper investigates whether more liquid types of foreign direct investment (FDI) are affected more by political uncertainty than less liquid ones. Drawing from the real options theory, we develop hypotheses on the sensitivity of different types of FDI. We utilize descriptive statistics and a simple estimation approach to gauge the liquidity of quarterly equity investments, reinvested earnings, and intra-company debt. Then, we deploy election data and the World Uncertainty Index to examine how the three FDI subtypes respond to high political uncertainty. In line with the real options theory, reinvested earnings significantly drop in an election quarter. However, this only holds for high-income countries. In lower-middle- and low-income countries, electoral uncertainty negatively affects equity investments, with higher institutional quality moderating the effect. In particular, the number of veto players and the government's credibility decrease the effect of uncertainty on FDI.

Keywords Foreign direct investment · Political uncertainty · Reinvested earnings · Equity · Multinational enterprises

JEL Classification F21 · F23 · G18

1 Introduction

In recent years, research on the effect of political uncertainty on foreign direct investment (FDI) has proliferated. In particular, the adoption of new measuring methods of political uncertainty has revived this literature strand. Julio and Yook

✉ Paul Stricker
paul.stricker@rub.de

[1] Chair of Macroeconomics, Faculty of Business Administration and Economics, FernUniversität in Hagen, 58097 Hagen, Germany

[2] Chair of International Economics, Faculty of Management and Economics, Ruhr University Bochum, 44801 Bochum, Germany

(2016) firstly use the timing of elections to measure the effect of political uncertainty on FDI and find that quarterly US FDI significantly drops before and during elections.[1] Chen et al. (2019) and Honig (2020) confirm these findings using a global sample and annual aggregate FDI inflows. Others use newly developed uncertainty measures like the Economic Policy Uncertainty index (EPU) by Baker et al. (2016) and the World Uncertainty Index (WUI) by Ahir et al. (2022) to confirm the negative effect of uncertainty on FDI (Avom et al. 2020; Canh et al. 2020; Hsieh et al. 2019; Nguyen and Lee 2021).

At their core, these studies are motivated by the real options theory, which states that investors hold back their investment when confronted with uncertainty about the future political environment (Azevedo et al. 2019; Bernanke 1983; Rodrik 1991; Stokey 2016). In a nutshell, the rationale of these theoretical models is that investments are not carried out as long as the information gained through waiting is more valuable than the costs of idle capital. This outcome is contingent on the irreversibility of the investment, as more liquid assets can easily be withdrawn should the uncertainty resolve in an unfavorable environment. Thus, studies investigating the effect of political uncertainty on FDI implicitly assume that their measure for FDI captures somewhat irreversible investments. Given that most studies use aggregate FDI as the dependent variable, this assumption is likely to be false since it is fairly well documented that not all FDI is irreversible. Instead, aggregate FDI inflows also embody highly liquid financial flows, which behave similarly to portfolio debt flows (Blanchard et al. 2016; Kerner 2014). For instance, in 2004, up to 43% of US foreign affiliates' assets were held in cash or in assets readily convertible to cash (Kerner and Lawrence 2014).

Against this backdrop, we re-examine the effect of political uncertainty on FDI using different subtypes of FDI with different degrees of liquidity. We use disaggregated data on equity investments, reinvested earnings, and intra-company debt and gauge their relative degree of liquidity using descriptive statistics and a simple estimation approach. Following the real options theory, we expect more liquid subtypes of FDI to be less responsive to political uncertainty.

To the best of our knowledge, the three different types of financing have not received much attention in the literature until now. While other subtypes of FDI like greenfield and brownfield investments (Calderón et al. 2004; Harms and Méon 2018; Iamsiraroj and Ulubaşoğlu 2015; Wang and Wong 2009) and sectoral FDI flows (Alfaro and Charlton 2007; Chakraborty and Nunnenkamp 2008; Vu et al. 2008; Vu and Noy 2009; Walsh and Yu 2010) are extensively researched, the distinction between equity, reinvested earnings and debt is largely overlooked (Lundan 2006). This is somewhat surprising since this distinction has policy relevance. The FDI life cycle theory suggests that any FDI endeavor starts with an initial equity (or intra-company debt) investment (Kogut 1986). Any follow-up investments financed through reinvested earnings are conditional on the initial equity investment. Given the high sunk costs of the entry investment, firms tend to be more selective with

[1] The connection between elections and uncertainty is well documented for financial markets. For example, Białkowski et al. (2008) and Boutchkova et al. (2012) show that elections are accompanied by higher stock market volatility.

their initial investments than with their follow-up investments (Barry 2018). As a result, policymakers are generally more interested in attracting new equity-financed projects than follow-up investments based on reinvested earnings.[2] Furthermore, the distinction is especially relevant for developing countries, as only equity and debt investments infuse fresh foreign capital into the country, while reinvested earnings recycle money that has been in the economy anyway (Kerner 2014).

By investigating the effect of political uncertainty on equity investments, reinvested earnings, and intra-company debt, we contribute to two strands of literature. First, we contribute to the literature surrounding political uncertainty and FDI (Canh et al. 2020; Chen et al. 2019; Choi et al. 2020; Honig 2020; Hsieh et al. 2019). In particular, by distinguishing between different subtypes according to liquidity, we are indirectly testing the predictions of the real options theory. Second, by estimating the effects of political uncertainty on different financial flows, we also contribute to the literature on the capital structuring in affiliates. While researchers usually employ firm-level data to elaborate the determinants of the different subtypes of FDI, we broaden the perspective by using aggregates of subtypes (Cull and Xu 2005; Demirbag et al. 2015; Desai et al. 2005, 2007; Nguyen 2016; Nguyen and Rugman 2015).

To explore how Multinational Enterprises (MNEs) react to uncertainty and which funds they hold back when uncertainty arises, we deploy quarterly data for equity investments, reinvested earnings, and intra-company debt ranging from 1996 to 2017, covering 76 countries. Following the previous literature, we use election dates to identify periods of high uncertainty and modulate different levels of uncertainty by interacting the election variable with a dummy for a leadership change and a set of indicators for institutional quality. We also check our findings' robustness by employing the WUI as a more general measure for uncertainty. Since the previous literature found that the investment deterring effect of uncertainty is particularly pronounced in developing countries, we form subsamples according to the income level of the host country (Chen et al. 2019; Honig 2020).[3]

We find a negative effect of elections on reinvested earnings but not on equity and intra-company debt in the full sample. This effect persists while adding a vast amount of control variables and is robust to using different transformations of the dependent variable. A subsequent subsample analysis finds that the effect is driven mainly by high-income countries, where reinvested earnings undergo a sizable cut during an election period. In middle-to-lower income countries, the uncertainty during elections affects equity flows instead of reinvested earnings, but the strength of the effect is moderated by institutional quality.

The remainder of the paper is organized as follows: "Literature" reviews the literature on uncertainty and FDI. "On the irreversibility of subtypes of FDI" introduces

[2] According to the World Bank, facilitating new and incremental investments are both crucial pillars of FDI promotion (Heilbron and Aranda-Larrey 2020). However, a survey of 74 investment promotion agencies shows that their services are skewed towards attracting new FDI rather than promoting expansions (Sanchiz Vincente and Omic 2020).

[3] We divide our sample into high-income countries, upper-middle-income countries and middle-to-lower income countries. The latter includes countries that the World Bank defines as lower-middle-income and low-income countries.

our liquidity measures and presents our hypotheses. "Data" introduces the data used. "Methodology" explains the methodology, while "Results" presents and discusses the results. "Conclusion" concludes.

2 Literature

Testing the effects of uncertainty empirically has proven difficult, as uncertainty is not directly observable. Multiple attempts were made to proxy uncertainty by utilizing economic measures, like forecast errors (Jurado et al. 2015; Rossi and Sekhposyan 2015) or financial volatility (Baker and Bloom 2013; Carrière-Swallow and Céspedes 2013). Lately, the development of new uncertainty indices, like the EPU by Baker et al. (2016) and the WUI by Ahir et al. (2022) have triggered a new wave of research on the effects of policy uncertainty on investment. These indices are based on frequency counts of uncertainty-related terms in prominent newspapers or reports and are therefore particularly suited to measure policy-related uncertainty.

Hsieh et al. (2019) investigates the investment flows between the US and 20 host countries and found that a peak in the host country's EPU index decreased US FDI inflows in the following two quarters. Zhu et al. (2019) add that the irreversibility of an investment, measured by bankruptcy costs, enhances the negative effect of uncertainty on FDI. Canh et al. (2020) confirm that domestic uncertainty decreases FDI inflows, but also find a positive association between global uncertainty and FDI inflows. As the analyzed sample consists of advanced and emerging economies, this finding indicates that advanced economies function as a safe haven for international investors. However, other studies contradict this hypothesis by finding a negative correlation between the WUI and FDI inflows (Avom et al. 2020).

One disadvantage of the above-described indices is that they are possibly endogenous to any development in economic variables. For this reason, the timing of elections has become a widely used alternative measure for policy uncertainty. Focusing on the uncertainty related to elections and FDI flows, Julio and Yook (2016) laid the foundation for this literature stream. Their analysis reveals a significant negative impact of the host countries' election on quarterly US FDI outflows to 43 countries between 1994 and 2010. However, after the initial drop, FDI was shown to recover relatively quickly. The results survive a robustness check using election data with strictly exogenous timing, addressing concerns of pro-cyclical FDI that coincides with early or unscheduled elections. Chen et al. (2019) and Honig (2020) follow Julio and Yook (2016) and confirm their results on a global level. Examining 126 countries between 1996 and 2015, Chen et al. (2019) finds that the negative effect on FDI in an election period is especially strong in less democratic countries. Similarly, Honig (2020) distinguishes between advanced and emerging economies and finds more evidence of adverse effects in developing countries. Agbloyor (2019) looks at FDI inflows to African countries and cannot find that elections significantly influence FDI in Africa. On the contrary, Gossel (2020) performs a similar analysis for sub-Saharan African countries and finds a negative effect of the election year on the FDI inflows while controlling for resource endowment.

3 On the irreversibility of subtypes of FDI

According to the real options theory, the sensitivity towards political uncertainty depends on the investment's irreversibility (Bernanke 1983). Fairly liquid assets are less affected by uncertainty because MNEs retain the ability to withdraw their assets if the uncertainty resolves into unfavorable economic conditions. In contrast, rather illiquid assets cannot be withdrawn that easily when the economic environment turns for the worst. Consequently, MNEs might be more hesitant in deploying them when political uncertainty increases.

While most of the literature confirms a negative effect of political uncertainty on aggregate FDI, none of the scholars verify to what extent their FDI measure is representing illiquid investments. In the following, we attempt to gauge the irreversibility of equity investments, reinvested earnings and intra-company debt by using liquidity metrics, and the share of financing that goes into physical projects. Then, based on our results, we form hypotheses on how reinvested earnings, equity investments, and intra-company debt react to political uncertainty. As previous studies have found that uncertainty has more pronounced effects on total FDI in developing and emerging countries than in developed economies, we distinguish between different income groups in our analysis (Chen et al. 2019; Honig 2020). To this end, we categorize countries according to their income into three groups: high-income countries (HIC), upper-middle-income countries (UMC), and lower-middle- to low-income countries (MLC).

3.1 Liquidity

To form hypotheses based on the liquidity argument, we proxy the liquidity of each subtype with two indicators. First, with the relative occurrence of negative observations in quarterly FDI inflows and second, with the share of retrieved investments to total investments. We assume that financial flows predominantly used for financing more liquid assets experience relatively more reversals over time than financial flows used to finance illiquid assets. Thus, the more liquid the underlying assets, the higher the relative occurrence of negative flows over time. To account for the fact that some flows might be negative but relatively small compared to the average inflow, we also consider the total share of retrieved assets.[4]

Table 1 displays the share of negative observations and the share of retrieved investments by subtype of FDI and income group. The comparison of the metrics across

[4] It should be noted that both measures are flawed since we only have net inflows available to calculate them. The share of negative observations to total observations only measures how often gross outflows exceed gross inflows. One can easily imagine scenarios in which such measure completely fails in capturing the liquidity of underlying assets. For example, a highly liquid asset that experiences high inflows and high outflows every period could be branded highly illiquid as long as gross inflows exceed outflows every period. Similarly, the share of retrieved investments does not indicate the actual share of retrieved assets as the true ratio is disguised by the prior netting of the FDI inflows. Nevertheless, we believe that the measures do give some insights into the liquidity of underlying assets. After all, the more liquid the underlying asset, the higher the probability that gross outflows exceed gross inflows. Thus, the indicators likely suffice to make a comparison between the different flows but should not be taken at face value.

Table 1 Liquidity by subtype of FDI and income group

Income group:	HIC			UMC			MLC		
	EQ	RE	DT	EQ	RE	DT	EQ	RE	DT
Share of negative observations (in %)	15.9	20.4	28.2	6.2	12.0	21.2	5.8	11.8	22.0
Retrieved investments (in %)	−10.9	−15.3	−29.6	−3.9	−6.2	−15.2	−0.8	−5.9	−13.3
Observations	2864	2846	2949	2098	1795	1917	864	808	832
Countries	37	37	37	26	26	26	13	13	13

Authors' calculation based on quarterly net FDI inflows (IMF 2020). Sample ranges from 1996 to 2017

HIC, high-income countries; *UMC*, upper-middle-income countries; *MLC*, lower-middle- to low-income countries; *EQ*, equity flow; *RE*, reinvested earnings; *DT*, intra-company debt flow

income groups yields one striking observation. Both liquidity measures show that all subtypes of FDI in HIC are more liquid than their respective counterparts in UMC or MLC. This could indicate that FDI is more often used as a vehicle for purely financial flows than physical investments in HIC. That assumption is congruent with the findings of previous research. In particular, Wacker (2016) finds that FDI data has a higher correlation with operational data of MNE in developing than in developed economies, and Casella (2019) concludes that FDI data for developing countries suffers less from data issues related to non-productive financial flows like pass-through FDI.

When comparing liquidity across subtypes of FDI, a clear pattern becomes visible. Equity investments appear to be the least liquid in all three country groups, followed by reinvested earnings and intra-company debt. Considering that the real options approach states that higher irreversibility leads to higher sensitivity towards political uncertainty, both liquidity measures suggest that equity investments are the most sensitive towards political uncertainty. However, we are cautious about building hypotheses for the relative liquidity of subtypes based on these results. In particular, for reinvested earnings and intra-company debt, the metrics might overstate the liquidity. Both types are likely to experience negative flows unrelated to the irreversibility of the underlying investment. That is, earnings that are repatriated instead of invested likely cause a negative observation in our data. For intra-company debt, debt repayments have a similar effect. We employ an additional empirical analysis in the following section to address these concerns.

3.2 Physical investments

The above-described liquidity metrics suffer from two critical downsides. For one, they are vulnerable to imprecisions in the data of net inflows. For another, they potentially overstate the liquidity of reinvested earnings and intra-company debt payments. In the following, we identify the irreversibility of the underlying asset by regressing a measure for physical FDI investments on equity inflows, reinvested earnings, and intra-company debt. This empirical exercise may provide a clearer picture of which subtypes of FDI finance highly irreversible physical projects. In particular, we estimate the following equation:

$$\text{greenfield FDI}_{i,t} = \beta_0 \text{EQ}_{i,t} + \beta_1 \text{RE}_{i,t} + \beta_2 \text{DT}_{i,t} + \text{e}_{i,t} \quad (1)$$

where $EQ_{i,t}$, $RE_{i,t}$, and $DT_{i,t}$ represent the net inflow of equity payments, reinvested earnings, and intra-company debt in country i at year t, respectively. The dependent variable $\text{greenfieldFDI}_{i,t}$ is the value of greenfield FDI compiled by fDi markets and published by the UNCTAD (2021). This data lends itself to this analysis, as it explicitly measures "new physical projects or expansions of existing investments which create new jobs and capital investment" (fDi Markets 2022). The estimated coefficients $\beta_0, \beta_1, \beta_2$ should then roughly display how much of the physical investment is financed through each subtype of FDI.[5] As explained above, physical

[5] This empirical exercise can only give a rough idea about which financial flows are used for physical investments based on the correlation between the two. We cannot estimate the true share of financing, since our financial flows are recorded on a net measure and thus the true "gross" inflow of funds is unknown to us.

investments are highly irreversible. Thus, we expect that financial flows predominantly used to finance these physical projects express a higher sensitivity towards political uncertainty.

Table 2 displays the results of regressing the value of greenfield FDI on the inflow of equity, reinvested earnings, and intra-company debt distinguishing between income groups. Comparing across the income groups, one can observe that the coefficients in HIC are substantially smaller than in UMC and MLC. Against the backdrop of the high liquidity metrics of equity investments and reinvested earnings in HIC, the small coefficient size could be interpreted as further evidence that a larger share of financial flows into HIC are associated with relatively liquid assets.

Comparing the estimated coefficients within each income group underlines the heterogeneous use of financial flows. In HIC, large-scale physical projects are mostly funded by reinvested earnings, while in UMC, reinvested earnings and equity investments are associated with such projects. Interestingly, in MLC, all coefficients are significant and above unity, which would indicate that all of the recorded net financial flows are used for greenfield projects.[6] Unfortunately, that makes it impossible to form any hypotheses on the relative irreversibility of flows in MLC.

The results resonate well with the FDI life cycle theory, which predicts that the share of follow-up investments in FDI increases with the development level (Brada and Tomšík 2009; Kogut 1986). In developed economies, many foreign investors already have established a network of subsidiaries maintained and expanded using reinvested earnings. On the contrary, a higher share of FDI in developing economies is represented by initial investments or market entries financed through equity and intra-company debt. This is precisely what we find in our analysis. The lower a country's development level, the more physical projects are financed through equity and intra-company debt.

3.3 Hypotheses

The liquidity metrics and the project financing analysis suggest that FDI into HIC is relatively liquid and, in large parts, unassociated to physical projects. Based on these two observations, we form the following hypothesis:

- **H1**: The sensitivity towards political uncertainty is lower in HIC than in UMC and MLC.

  Forming hypotheses for the sensitivity of the subtypes of FDI to political uncertainty is more challenging since the liquidity metrics suggest that equity payments are the least liquid while the project analysis points towards reinvested earnings. However, as the liquidity metrics likely overstate the reversibility of reinvested earnings, we rather rely on the project analysis for our hypotheses.

[6] For instance, the coefficient on equity investments of $\beta_0 = 1.2$ would imply that 120% of equity financing is used for physical projects. Obviously, the share of financing used for physical projects cannot exceed 100%t. We ascribe these results to the fact that our financial flows are recorded on a net basis.

Table 2 Average project financing by income group

Income group:	HIC	UMC	MLC
Dependent variable:	Greenfield project value	Greenfield project value	Greenfield project value
	(1)	(2)	(3)
EQ	0.047	0.341***	1.200***
	(0.030)	(0.096)	(0.244)
RE	0.514***	0.991***	1.351**
	(0.085)	(0.102)	(0.616)
DT	0.034	0.237	2.291***
	(0.055)	(0.156)	(0.841)
Observations	551	383	162
Countries	37	26	13
Adjusted R^2	0.52	0.68	0.82

Robust standard errors in parenthesis. Sample ranges from 2003 to 2017

HIC, high-income countries; *UMC*, upper-middle-income countries; *MLC*, lower-middle- to low-income countries; *EQ*, equity flow; *RE*, reinvested earnings; *DT*, intra-company debt flow

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

- **H2**: In HIC, reinvested earnings are more sensitive to political uncertainty than equity payments and intra-company debt flows.
- **H3**: In UMC, reinvested earnings are more sensitive to political uncertainty than equity payments and intra-company debt flows.

In contrast to HIC and UMC, greenfield projects in MLC are financed by a diverse mix of financial flows. As the project financing analysis indicates that all subtypes of FDI are used to the full extent to finance physical projects, we cannot infer any hypothesis for the relative irreversibility of each subtype of FDI. Therefore, we resort to the results of the liquidity metrics and conclude this chapter with our last hypothesis:

- **H4**: In MLC, equity payments are more sensitive to political uncertainty than reinvested earnings and intra-company debt flows.

4 Data

For disaggregate FDI inflows, data from the IMF's Balance of Payment Statistics is used (IMF 2020). The IMF provides quarterly FDI data partitioned into equity, reinvested earnings, and intra-company debt flows for many countries. Since the magnitude of all FDI flows (positive and negative) increase with the size of the economy, we standardize each FDI flow by the annual GDP of the previous year. Table 3 displays the descriptive statistics.

The full sample descriptive statistics reveal that equity investments are the largest FDI flows on average. Also, they show the highest maxima and standard deviation, indicating that they represent occasional large-scale investment projects. As can be seen by the median flows reported in Table 3, reinvested earnings are much smaller in magnitude than equity inflows since they are predominantly used for incremental investments. Additionally, the decision of whether profits reinvested or paid out as dividends has to be made much more frequently.

The descriptive statistics reveal another important feature that underlines the results of the previous physical project analysis. The lower the country's income level, the higher the importance of equity financing relative to the reinvestment of earnings. The median equity flow in percent of GDP into UMC and MLC is considerably higher than the median equity inflow in HIC. On the contrary, reinvested earnings in percent of GDP are higher in HIC than in UMC and MLC. This pattern is explained well by the FDI life cycle theory. As markets mature, opportunities for large-scale investments become rarer, leading to a relative decline in equity investments in developed countries. On the other side, in emerging and developing countries, there are more project opportunities to seize, causing equity investments to be relatively larger than in developed countries.

To capture policy uncertainty, we take a multifaceted approach. First, we use global data on election dates from the Database of Political Institutions (DPI) by Scartascini et al. (2018), which serves as an exogenous measure for policy

Table 3 FDI summary statistics

Sample	Variable	Obs	Median	Mean	St. dev	Min	Max
Full sample	EQ/GDP	6413	0.32	1.08	6.01	−52.53	131.6
	RE/GDP	6031	0.14	0.31	0.84	−5.06	10.89
	DT/GDP	6298	0.1	0.42	2.32	−40.51	33.63
HIC	EQ/GDP	3149	0.29	1.02	6.09	−52.53	100.82
	RE/GDP	3134	0.18	0.42	1.1	−5.06	10.89
	DT/GDP	3245	0.15	0.56	2.99	−40.51	33.63
UMC	EQ/GDP	2304	0.36	1.28	7.03	−10.85	131.6
	RE/GDP	1985	0.12	0.2	0.32	−1.75	2.22
	DT/GDP	2117	0.08	0.27	1.09	−4.23	14.62
MLC	EQ/GDP	948	0.41	0.8	1.06	−2.93	8.8
	RE/GDP	900	0.08	0.17	0.45	−4.11	3.85
	DT/GDP	924	0.03	0.23	1.55	−36.9	10.4

EQ/GDP, equity flow standardized by annual GDP of the previous year; *RE/GDP*, reinvested earnings standardized by annual GDP of the previous year; *DT/GDP*, intra-company debt flow standardized by annual GDP of the previous year; *HIC*, high-income countries; *UMC*, upper-middle-income countries; *MLC*, lower-middle- to low-income countries

uncertainty. In the past, elections could be linked to higher uncertainty on financial markets (Białkowski et al. 2008; Boutchkova et al. 2012) and were found to correlate with count-based measures of uncertainty like the EPU or the WUI (Ahir et al. 2022; Baker et al. 2016). In our baseline estimation, we incorporate a dummy variable taking the value of one for an election period and zero otherwise.

Since not every election is afflicted with the same uncertainty, we modulate the uncertainty around elections by controlling for the reelection of the incumbent leader and the institutional quality. The uncertainty around elections roots in the possibility of a change in the countries' policy course. Therefore, if agents expect the incumbent leader to stay in power, uncertainty should be lower than if a change appeared more likely. On a similar note, a sound institutional framework might mitigate the uncertainty around elections. They set boundaries for the most extreme policy changes and reassure agents of a stable legal environment.

As an alternative to election dates, the WUI by Ahir et al. (2022) is employed as a more continuous measure for uncertainty. The index measures heightened uncertainty by counting the frequency of uncertainty-related words in quarterly country reports of the Economist Intelligence Unit (EIU). Ahir et al. (2022) can show that the index captures political uncertainty around elections, as well as economic uncertainty originating from other (non-political) events. It is therefore particularly suited to test whether the results obtained from the analysis of election dates is indicative for MNE's behavior under general uncertainty. We choose the WUI over the alternative EPU index for two reasons. First, the EPU index is only available for 22 countries, which would severely limit our sample. Second, while the EPU index draws on newspapers for counting the frequency of uncertainty-related words, the WUI uses

quarterly country reports of the EIU. Sourcing the count measure from only one medium renders the index more consistent across countries, making it more suitable for large panel analyses.

As economic control variables, we deploy a common set of indicators. The GDP growth rate captures the speed of economic development and indicates potential profits. We employ GDP per capita to capture any motivations for horizontal investments. The variable Trade is the sum of exports and imports relative to GDP and should be positively connected to any vertical investments. The inflation, measured by the consumer price index (CPI), controls for good macroeconomic management. Since reinvested earnings and intra-company debt flows are most likely influenced by currency movements, we also include the growth rate of the exchange rate, the standard deviation of the exchange rate, and the capital account openness index by Chinn and Ito (2006). Additionally, the indicators Political Stability and Regulatory Quality of the World Governance Indicators are added to the specification (Kaufmann et al. 2010). The former captures the perceived possibility of the government getting thrown over by unlawful or violent means. The latter specifically captures the government's ability to implement policies that promote private sector development.[7]

5 Methodology

In the baseline estimation, we use national elections to identify periods of high policy uncertainty. In contrast to other uncertainty measures, the timing of an election is usually independent of economic downswings. Thus, national elections can be seen as natural experiments regarding the effect of uncertainty on the behavior of economic agents (Julio and Yook 2012). To analyze this effect, we employ a fixed-effects estimation following the equation:

$$\mathrm{FDI}_{\mathrm{i,t}} = \beta_0 + \beta_1 \mathrm{FDI}_{\mathrm{i,t-1}} + \sum_{\mathrm{d=-1}}^{1} \beta_{\mathrm{d+3}} \mathrm{Election}_{\mathrm{i,t+d}} + X\theta + \gamma_{\mathrm{i}} + \delta_{\mathrm{q}} + e_{\mathrm{i,t}} \qquad (2)$$

where i indicates the country and t the running quarter. The variable $\mathrm{FDI}_{i,t}$ stands for the respective FDI measure. We use the quarterly FDI inflow relative to the previous year's annual GDP in our baseline. The variable $\mathrm{Election}_{i,t}$ stands for a dummy switching from zero to one when an election is carried out in quarter t. It is included for the previous, the current and the next quarter. The matrix $\boldsymbol{X}$ comprises the set of control variables described in the previous section. Country fixed-effects are captured by γ_i. A set of four seasonal fixed-effects are represented by δ_q, where

[7] The summary statistics can be found in Table 11 in the Appendix 1. Definitions and sources of all variables can be found in Table 12 in the Appendix 1.

$q = \{1, 2, 3, 4\}$ stands for each calendar quarter.[8] The standard errors are clustered at the country level.

In addition to the economic control variables, we include the lagged dependent variable on the right-hand side. MNEs most likely spread the payments for new investment projects over multiple quarters or even years, which would induce a correlation between present and past FDI flows. Adding the lagged dependent variable alleviates this problem but also introduces the Nickell-bias into our model (Nickell 1981). However, with up to 88 time periods available, we consider it negligible.[9]

Another common econometric problem occurring in studies on FDI is reversed causality. That is, the most important driving forces of FDI may also be affected by FDI themselves (Blonigen and Piger 2014). For instance, if an MNE invests down the supply chain intending to import, process, and reexport intermediates, trade figures may rise due to that investment. This endogeneity problem requires special consideration in any annual FDI model specification. We argue that endogeneity is less of a problem in our analysis due to two reasons. First, using quarterly data mitigates the simultaneity of the investment flow and the associated subsequent increased economic activity.[10] The financial transaction behind an FDI executed in one quarter is not very likely to increase trade or economic activity in the very same quarter (although it might throughout the following year). Second, our variables of interest, the election dummies, are most likely independent from economic variables. Although the possibility that elections are called early by the incumbent party or leader so that the election aligns with an economic upswing cannot be ruled out, we considered the chances of this scenario affecting our results to be rather slim. This is supported by the results of Julio and Yook (2016). Their study on elections and US FDI found that a subsample with strictly exogenously timed elections did not yield different results than the full sample. Moreover, we find no correlation between the election dummies and any other variable in our study (see Table 12 in the Appendix 1).

6 Results

6.1 Baseline

Table 4 displays the regression results of the baseline specification. Columns 1–3 show the regression of equity, reinvested earnings, and debt flows on the election dummies only. A significant negative effect during an election period can only be observed for reinvested earnings.

[8] In some specifications, we switch the seasonal fixed-effects for regular time fixed-effects which we refer to as quarterly fixed-effects.

[9] Due to availability of the FDI flows, the number of observations differs between the different models.

[10] Since some of our control variables only vary annually, a simultaneous increase cannot be measured anyway. However, GDP growth varies on the quarterly basis and, therefore, could cause an endogeneity bias.

Table 4 Baseline results using GDP scaled flows

Dependent variable:	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
F.Election	0.018	0.013	−0.056	0.039	−0.014	0.005	−0.001	−0.011	−0.006
	(0.116)	(0.031)	(0.123)	(0.201)	(0.032)	(0.145)	(0.184)	(0.032)	(0.150)
Election	−0.054	−0.077**	−0.010	−0.185	−0.078**	−0.0001	−0.173	−0.074*	−0.009
	(0.175)	(0.031)	(0.139)	(0.276)	(0.040)	(0.095)	(0.261)	(0.039)	(0.096)
L.Election	−0.091	−0.027	−0.127	0.043	−0.003	−0.146	0.065	−0.005	−0.151
	(0.191)	(0.036)	(0.112)	(0.172)	(0.044)	(0.117)	(0.179)	(0.043)	(0.120)
lag(EQ/GDP)				0.816***			0.815***		
				(0.051)			(0.050)		
lag(RE/GDP)					0.433***			0.430***	
					(0.106)			(0.106)	
lag(DT/GDP)						0.487***			0.484***
						(0.158)			(0.156)
GDPG				0.527	−0.026	−0.293	0.379	−0.036	−0.350
				(0.351)	(0.134)	(0.416)	(0.314)	(0.133)	(0.416)
ln(GDPPC)				0.027	0.030	0.072	−0.576	−0.054	−0.193
				(0.167)	(0.026)	(0.074)	(0.361)	(0.100)	(0.216)
Trade				−0.015	0.002	0.000	−0.020	0.001	−0.002
				(0.014)	(0.002)	(0.002)	(0.017)	(0.002)	(0.003)
ExrateG				−2.989	−0.622	−0.101	−3.728	−0.567	−0.163
				(3.289)	(0.387)	(0.417)	(3.960)	(0.453)	(0.482)
ExrateVolatility				0.002	−0.000	0.005**	0.002	−0.000	0.005**
				(0.002)	(0.001)	(0.002)	(0.003)	(0.001)	(0.002)

Table 4 (continued)

Dependent variable:	EQ/GDP (1)	RE/GDP (2)	DT/GDP (3)	EQ/GDP (4)	RE/GDP (5)	DT/GDP (6)	EQ/GDP (7)	RE/GDP (8)	DT/GDP (9)
CPI				0.000	0.000	−0.001	0.000	0.000	0.000
				(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)
PoliticalStab				−0.015	−0.001	−0.001	−0.011	0.000	0.001
				(0.012)	(0.001)	(0.003)	(0.013)	(0.002)	(0.003)
RegQual				−0.000	−0.002	−0.005	0.005	−0.001	−0.002
				(0.015)	(0.002)	(0.005)	(0.011)	(0.002)	(0.004)
Openness				0.268	0.198*	0.427	0.290	0.195	0.466
				(0.304)	(0.114)	(0.310)	(0.294)	(0.120)	(0.290)
Observations	5660	5299	5545	4580	4361	4581	4580	4,361	4581
Countries	76	76	76	76	76	75	76	76	75
Elections	354	332	342	299	284	295	299	284	295
Fixed-effects	Seasonal	Seasonal	Seasonal	Seasonal	Seasonal	Seasonal	Quarterly	Quarterly	Quarterly
R^2	0.001	0.011	0.0005	0.672	0.218	0.239	0.673	0.193	0.237
Adjusted R^2	−0.014	−0.004	−0.014	0.665	0.201	0.224	0.661	0.163	0.209

Robust standard errors clustered at the country level in parenthesis. All specifications include country fixed-effects and a constant. Seasonal effects (columns 1–6) and quarterly time effects (columns 7–9) are not reported. Sample ranges from 1996 to 2017

EQ, equity flow; *RE*, reinvested earnings; *DT*, intra-company debt flow; *Election*, binary variable indicating the quarter of an election; *GDPG*, GDP growth; *GDPPC*, per capita GDP; *ExrateG*, exchange rate growth rate; ExrateVolatility, exchange rate volatility; *CPI*, consumer price index; *Openness*, capital account openness index by Chinn and Ito (2006); *PoliticalStab*, political stability index of the World Governance Indicators (Kaufmann et al. 2010); *RegQual*, regulatory quality index of the World Governance Indicators (Kaufmann et al. 2010)

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

Adding the control variables to the specification (columns 4–6) yields qualitatively similar results. The negative effect during an election on reinvested earnings persists, while no other form of FDI is sensitive to elections. Additionally, the effect size slightly increases in magnitude, which further approves a significant relationship between elections and the reinvested earnings. The coefficient suggests that in an election quarter, the share of reinvested earnings per GDP drops by almost 0.08 percentage points ceteris paribus. This is quite a sizeable amount, representing roughly 25% of the average reinvested earnings to GDP per quarter. The effect size is considerably larger than the effect size found for total FDI in comparable specifications of other studies. For instance, Chen et al. (2019) found that the total annual FDI per GDP decreased by roughly 0.014 percentage points in election years. Many factors could cause the spread between the coefficients; however, we think that the following two are the most relevant. First, our analysis and previous research showed that the negative effect of electoral uncertainty is restricted to the election quarter and at most carries over to the adjacent quarters (Julio and Yook 2016). That means using annual data bears the risk of missing effects observable when employing quarterly data. Second, our baseline suggests that other forms of FDI are less sensitive towards electoral uncertainty than reinvested earnings. Naturally, total FDI, being the aggregate of all subtypes, is subject to relatively smaller changes in the election period, which further increases the risk of not detecting reduced investment inflows.

The results found in the baseline survive swapping the seasonal fixed-effects for quarterly time fixed-effects, as seen in columns 7–9. Furthermore, an additional robustness check using the logarithm of the different FDI flows as dependent variables confirmed the above results (see Table 13 in the Appendix 1).

As for the control variables, most coefficients are robust in magnitude and sign to adding quarterly time fixed-effects; however, only very few coefficients exert a significant influence. Notably, the exchange rate volatility significantly increases the intra-company debt flows but has no significant effect on equity and reinvested earnings. Capital account openness increases all three flows, though it is only significant for reinvested earnings in the model using seasonal fixed-effects. While the insignificant coefficients of the other control variables are striking, we are confident that this does not compromise the validity of our results regarding the election dummies for several reasons. For one, scaling the dependent variable by GDP already takes away some of the variations that the economic control variables could have explained. This is also illustrated by our robustness check using the logarithm of the dependent variables where the economic controls carry a lot more explanatory power (Table 14 in the Appendix 1). Adding the lagged dependent variable to the model equation only exacerbates this effect, as

shown by the highly significant coefficients on the lagged dependent variables in Table 4.

Another explanation for the weak performance of the economic control variables may be found in the heterogeneity of FDI subtypes. While we chose to employ the same control variables for all three subtypes to allow for a comparison, individual sets of control variables fitted explicitly to each subtype would likely have produced more significant results. This is also depicted by the R^2 of each model specification. The used control variables best explain the equity flows, where the proportion of explained variance is three times higher than the explained variance of the other specifications. This is because the control variables used originate from the previous literature, which in most cases considered aggregate FDI. As equity flows, on average, represent the largest share of the aggregate measure, the control variables work particularly well in explaining these flows.

6.2 Subsample analysis

To answer our hypotheses inferred from the irreversibility of FDI subtypes, we divide our sample into three subsamples. As in the previous sections, we categorize countries according to their income into HIC, UMC, and MLC and reiterate our baseline estimation for each group separately.

Table 5 displays the results for the three different subsamples. Interestingly, the sensitivity of the subtypes of FDI towards electoral uncertainty seems to vary greatly depending on the host country's income group. The negative effect on reinvested earnings found in the baseline estimation appears to be wholly driven by investors in HIC, as the coefficient on the election dummy turns out negative and highly significant. In terms of magnitude, the effect of uncertainty during an election in HIC is estimated to be almost twice as high as in the full sample baseline. The ratio of reinvested earnings to GDP drops by 0.13 percentage points in the run-up of an election in HIC. That corresponds to roughly 30% of the average reinvested earning inflow in HIC per quarter. These results confirm the project financing analysis findings and thus support **H2**.[11]

For middle- and lower-income countries, the results are rather mixed. In UMC, no significant FDI reductions were detected during election periods. Therefore, we cannot make any statement regarding **H3**. In MLC, electoral uncertainty only negatively affects equity investments, which is in line with our hypothesis **H4**. It is somewhat surprising, however, that neither reinvested earnings nor intra-company debt flows appear to be sensitive towards political uncertainty, given that the project financing analysis suggested that they are all involved in financing highly irreversible physical projects. The coefficient on the election variable indicates that equity investments per GDP decrease by 0.19 percentage points during an election quarter

[11] As a robustness check, we estimated a gravity model for FDI into HIC using bilateral data. The results are qualitatively the same as in the unilateral analysis. See Appendix 2 for a discussion of the model and the results.

Table 5 Subsample with GDP scaled flows

Income group:	HIC			UMC			MLC		
Dependent variable:	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP	EQGDP	RE/GDP	DT/GDP
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
F.Election	−0.106	−0.001	0.002	0.323	−0.012	−0.001	−0.122**	−0.073	0.110
	(0.248)	(0.052)	(0.244)	(0.465)	(0.023)	(0.058)	(0.053)	(0.054)	(0.074)
Election	−0.404	−0.125**	0.043	0.236	−0.007	0.023	−0.192*	−0.058	−0.074
	(0.466)	(0.062)	(0.155)	(0.183)	(0.024)	(0.046)	(0.100)	(0.084)	(0.160)
L.Election	−0.242	0.023	−0.267	0.379	−0.047	0.043	−0.059	0.013	0.008
	(0.154)	(0.068)	(0.194)	(0.412)	(0.054)	(0.080)	(0.094)	(0.033)	(0.147)
lag(EQ/GDP)	0.758***			0.871***			0.369***		
	(0.117)			(0.002)			(0.063)		
lag(RE/GDP)		0.456***			0.352***			0.077	
		(0.109)			(0.107)			(0.157)	
lag(DT/GDP)			0.517***			0.604***			0.123
			(0.174)			(0.090)			(0.225)
GDPG	1.882	0.315	−2.793*	0.581*	−0.021	0.205	0.054	−0.116	−0.301
	(1.983)	(0.622)	(1.427)	(0.333)	(0.072)	(0.175)	(0.239)	(0.228)	(0.889)
ln(GDPPC)	0.500	0.103	0.223	−0.127	0.011	0.043	0.047	0.239***	0.992
	(0.396)	(0.083)	(0.206)	(0.179)	(0.031)	(0.028)	(0.156)	(0.046)	(0.888)
Trade	−0.036	0.001	−0.000	−0.004	0.002	−0.000	0.003	0.009***	0.012
	(0.024)	(0.003)	(0.004)	(0.006)	(0.001)	(0.001)	(0.003)	(0.002)	(0.009)
ExrateG	−4.644	−0.974	−0.104	−0.366	−0.110	−0.283	−0.052	−0.538	−0.086
	(6.787)	(0.664)	(0.771)	(0.648)	(0.137)	(0.239)	(0.446)	(0.401)	(1.034)
ExrateVolatility	0.016	0.002	0.003	−0.001	−0.001**	0.003**	−0.000	−0.003***	−0.000
	(0.016)	(0.002)	(0.004)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)

Table 5 (continued)

Income group:	HIC			UMC			MLC		
Dependent variable:	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP	EQGDP	RE/GDP	DT/GDP
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CPI	0.006	−0.002	−0.008	0.001	0.000	−0.000	−0.003	−0.001	−0.014
	(0.009)	(0.004)	(0.008)	(0.001)	(0.000)	(0.000)	(0.003)	(0.001)	(0.012)
PoliticalStab	−0.002	−0.001	0.004	−0.027	−0.001	−0.004	0.001	−0.004**	−0.024
	(0.008)	(0.003)	(0.005)	(0.028)	(0.001)	(0.004)	(0.007)	(0.002)	(0.022)
RegQual	−0.059	−0.011	−0.025*	0.016	0.001	0.000	0.008	0.002	0.013
	(0.044)	(0.007)	(0.013)	(0.016)	(0.001)	(0.002)	(0.006)	(0.002)	(0.010)
Openness	1.146	0.526***	0.942	0.154	−0.094	0.070	−0.332	−0.079	−0.320
	(0.732)	(0.136)	(0.656)	(0.239)	(0.066)	(0.069)	(0.563)	(0.346)	(0.338)
Observations	2,390	2397	2496	1589	1384	1492	644	580	667
Countries	37	37	37	26	26	25	13	13	13
Elections	169	168	172	96	84	90	34	32	33
R^2	0.592	0.250	0.275	0.767	0.175	0.373	0.202	0.152	0.058
Adjusted R^2	0.583	0.234	0.259	0.760	0.150	0.356	0.164	0.109	0.015

Robust standard errors clustered at the country level in parenthesis. All specifications include country fixed-effects. The constant and the seasonal fixed-effects are not reported. The sample ranges from 1996 to 2017

HIC, high-income countries; *UMC*, upper-middle-income countries; *MLC*, lower-middle- to low-income countries; *EQ*, equity flow; *RE*, reinvested earnings; *DT*, intra-company debt flow; *Election*, binary variable indicating the quarter of an election; *GDPG*, GDP growth; *GDPPC*, per capita GDP; *ExrateG*, exchange rate growth rate; *ExrateVolatility*, exchange rate volatility; *CPI*, consumer price index; *Openness*, capital account openness index by Chinn and Ito (2006); *PoliticalStab*, political stability index of the World Governance Indicators (Kaufmann et al. 2010); *RegQual,* regulatory quality index of the World Governance Indicators (Kaufmann et al. 2010)

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

in MLC, ceteris paribus. Considering that there is also a negative effect on equity investments in the quarter before the election, a country within the lowest income group loses out on equity investments roughly worth 0.31% of GDP within half a year around an election. As the total loss of FDI during an election in MLC is higher than in HIC, we interpret the results as support for **H1**.

Furthermore, the results appear to be representative despite the small sample size since other studies found effects of a similar magnitude for total FDI. Honig (2020) analyzed 79 developing countries and found that in the year running up to a presidential election, total FDI to GDP dropped by 0.34 percentage points. Similarly, Gossel (2020) found that FDI to GDP is roughly 0.42 percentage points lower during the year of an executive election in sub-Saharan countries.

6.2.1 Moderating uncertainty around elections

In the previous subsample analysis, we implicitly assumed that every election causes an increase in uncertainty of the same magnitude. This is a strong simplification, as there are many factors mediating the level of uncertainty. In some cases, the election outcome might be foreseeable, reducing the uncertainty to a bare minimum. In others, the result might be largely irrelevant for MNEs, as the policy space is too narrow to affect their business.

We decided to focus on the root of all political uncertainty around elections, namely, the possibility of a change in politics. Following this logic, we hypothesize that elections that do not bring about a change in the political leadership are associated with less uncertainty, as the policy course is likely to remain stable.[12] Hence, we expect that changing the executive or ruling party will result in a more substantial decrease in FDI, especially in the quarters following the election. To test this assumption, we estimate our subsample analysis including a dummy variable, which takes the value of one in quarters in which the election resulted in a change in leadership. To capture uncertainty shortly before and after a change in politics, we also include the lead and the lag of the change indicator.

Table 6 displays the coefficients on the election variable and the variable identifying leadership changes. The results confirm a negative effect on reinvested earnings in HIC during the election period and a negative effect on equity investments in MLC. Additionally, we find a negative effect on reinvested earnings in MLC in cases where the election does not bring about a change in leadership. This is somewhat surprising, as we hypothesized that a change is afflicted with more uncertainty than prolonging the status quo. A similar effect of even

[12] Other scholars have used the election winner's victory margin to capture the closeness of an election. We decided against this approach since we find the victory margin to be a misleading indicator. In parliamentary countries, governments are often formed via coalitions. Neither the new governments majority nor the largest government party's share of votes is able to indicate the uncertainty related to the election. The winning party might have a number of potential coalition partners, resulting in a variety of possible victory margins of which none accurately depict the closeness of the election. For presidential elections, the main obstacle is the interpretation of the voting shares of first and second round vote's winner. Here, 40% of the votes may be seen as a clear victory when three candidates participate but would be a clear defeat in a run-up with only two candidates.

Table 6 Subsample with GDP scaled flows and change in leadership

Income group:	HIC			UMC			MLC		
Dependent variable:	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT /GDP
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
F.Election	0.017	−0.005	0.037	0.400	−0.008	0.001	−0.159*	−0.048	0.035
	(0.285)	(0.064)	(0.284)	(0.537)	(0.025)	(0.061)	(0.080)	(0.044)	(0.094)
Election	−0.677	−0.152**	0.122	0.312	0.001	0.035	−0.164	−0.146***	−0.176
	(0.509)	(0.070)	(0.196)	(0.224)	(0.024)	(0.046)	(0.095)	(0.033)	(0.240)
L.Election	−0.192	0.080	−0.267	0.468	−0.064	0.044	−0.061	0.007	−0.074
	(0.156)	(0.065)	(0.224)	(0.491)	(0.059)	(0.086)	(0.094)	(0.063)	(0.139)
F.Change	−0.591	0.017	−0.177	−0.646	−0.035	−0.015	0.139	−0.139	0.052
	(0.542)	(0.098)	(0.495)	(0.609)	(0.083)	(0.159)	(0.123)	(0.194)	(0.245)
Change	1.295*	0.131	−0.387	−0.727*	−0.079	−0.112	−0.184	0.467	0.416
	(0.669)	(0.119)	(0.275)	(0.420)	(0.098)	(0.134)	(0.341)	(0.452)	(0.339)
L.Change	−0.275	−0.302*	0.005	−0.949	0.217	−0.014	0.086	0.034	0.215
	(0.420)	(0.178)	(0.300)	(0.804)	(0.167)	(0.095)	(0.095)	(0.215)	(0.345)
Observations	2390	2397	2496	1589	1384	1492	601	580	593
Countries	37	37	37	26	26	25	13	13	13
Elections	169	168	172	96	84	90	34	32	33
Adjusted R^2	0.59	0.25	0.27	0.76	0.17	0.36	0.18	0.14	0.032

Robust standard errors clustered at the country level in parenthesis. All specifications include country fixed-effects, seasonal fixed-effects, and all control variables present in the baseline. The coefficients on the control variables, the constant and the seasonal fixed-effects are not reported. The sample ranges from 1996 to 2017

HIC, high-income countries; *UMC,* upper-middle-income countries; *MLC*, lower-middle- to low-income countries; *EQ*, equity flow; *RE*, reinvested earnings; *DT*, intra-company debt flow; *Election*, binary variable indicating the quarter of an election; *Change*, binary variable indicating a change in leadership

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

higher magnitude can be observed for equity payments in HIC. Here, a change in leadership is associated with a strong increase in equity investments. We interpret these results not as a response to lesser uncertainty but as reactions to favorable election outcomes. MNEs might prefer one candidate over another and therefore react to desirable changes with an increase in their operations. However, this is likely not always the case. In particular, we also find negative effects reinvested earnings after a change in leadership in HIC and a decrease in equity investments in the election period in UMC. These results could indicate that unfavorable leadership changes might extend the uncertainty after the election, leading to prolonged hesitation among MNE.

6.2.2 Institutional characteristics and elections

Previous studies found that good institutional quality can mitigate the effects of uncertainty on FDI. Julio and Yook (2016) included institutional variables provided by the ICRG and found that government stability, corruption, and implemented checks and balances influence how MNEs react to uncertainty around elections. Canh et al. (2020) explored whether the democratization of a country affects FDI flows under uncertainty, and Nguyen and Lee (2021) found financial institutions to mitigate the negative effect of political uncertainty on FDI. In this subsection, we modify our subsample analysis to investigate whether institutions affect the three different subtypes of FDI.[13] To this end, we interact the election variable with a set of institutional variables. In particular, we estimate the following equation:

$$\begin{aligned} \mathrm{FDI}_{i,t} = \beta_0 + \beta_1 \mathrm{FDI}_{i,t-1} + \sum_{d=-1}^{1} \beta_{d+3} \mathrm{Election}_{i,t+d} + \sum_{e=-1}^{1} \beta_{e+6} \mathrm{Election}_{i,t+e} \\ * \mathrm{Inst}_{i,t} + \beta_8 \mathrm{Inst}_{i,t} + X\theta + \gamma_i + \delta_q + e_{i,t} \end{aligned} \tag{3}$$

Variable definitions and conventions are the same as in Eq. 2. The variable $\mathrm{Inst}_{i,t}$ represents one of the six institutional dimensions of the WGI, namely, Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Corruption Control (Kaufmann et al. 2010). The country rankings are normalized to range between 0 (lowest institutional quality) to 100 (highest institutional quality). Additionally, we include the number of checks and balances implemented in the institutional framework, as defined by Scartascini et al. (2018). This variable represents the number of veto players in the institutional framework. The higher the score, the more veto players monitor the political decisions of the executive. Due to the high correlation

[13] We also checked whether elections in presidential systems are afflicted with more uncertainty than elections in parliamentary system. Unfortunately, for MLC, there are too few parliamentary countries in our sample to make robust inferences. As the system did not have any effect on uncertainty in HIC, we decided not to report our results.

between the institutional variables, we only include one of the seven institutional variables at a time. Distinguishing between the three subtypes of FDI and the three income groups yields 63 ($3 \times 3 \times 7$) estimations. For the sake of brevity, we will not present all results but only focus on the most striking instead.[14] Since most of the interaction terms were insignificant in HIC and UMC, we only report results for MLC. Table 7 shows the coefficients of the election variables and their interaction with Checks and Balances (columns 1–3), Government Effectiveness (columns 4–6), Rule of Law (columns 7–9), and Voice and Accountability (columns 10–12).

The results confirm a negative effect on equity investments in the quarter before an election in all specifications. Additionally, the estimates suggest that countries with low Rule of Law and Voice and Accountability rankings also suffer from significant reductions in reinvested earnings and intra-company debt. The results further suggest that countries scoring a higher rank in these four institutional characteristics experience less severe FDI decline. In particular, the implementation of additional checks and balances seems to reduce the uncertainty around elections, presumably by reassuring MNEs of a controlled political environment without sudden policy shifts. Similarly, a higher score in Government Effectiveness could indicate more credible commitments by the government and therefore higher predictability. The coefficient size suggests that a standardized rank of 50 is necessary to avoid any reduction in equity investments during elections, which is a merely above-average score.[15]

Higher scores in the Rule of Law ranking may reflect a stronger judicial safety net for MNE. Since the positive effect of property rights and investor protection on FDI is well documented, these results do not come as a surprise. However, with a necessary score of above 60 to avoid all negative implications of elections on FDI, the threshold for reducing uncertainty to a minimum is quite high.

The significant coefficients on Voice and Accountability seem to fall out of the picture at first. However, freedom of expression and free media can function as institutions to keep government executives in check. Hence, they potentially contribute to a more reasonable, foreseeable political environment, which may positively

[14] The results of all 63 estimations are available upon request.

[15] Since the diversity of institutional quality is difficult to measure, exact predictions are impossible to make. When stating the necessary rank to reduce uncertainty to a minimum, we do not intend to make a prediction, but to compare the effectiveness of the different institutional dimension in reducing uncertainty. The necessary rank to reduce uncertainty to a minimum should therefore be interpreted as a measure for the relative feasibility of alleviating uncertainty through the improvement of institutional quality.

Table 7 Elections in MLC and institutional quality

Institutional variable:	Checks and balances			Government effectiveness			Rule of law			Voice and accountability		
Dependent variable:	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
F.Election	−0.270***	−0.101	0.023	−0.583***	−0.176	−0.744	−0.351**	−0.278**	−0.586**	−0.556***	−0.203**	−0.467*
	(0.085)	(0.118)	(0.084)	(0.164)	(0.136)	(0.514)	(0.115)	(0.109)	(0.210)	(0.182)	(0.092)	(0.246)
Election	−0.205	−0.019	−0.026	−0.320	−0.029	−0.087	−0.010	0.208	−0.341	0.107	0.137	−0.402
	(0.140)	(0.176)	(0.240)	(0.299)	(0.233)	(0.420)	(0.268)	(0.248)	(0.302)	(0.336)	(0.144)	(0.552)
L.Election	−0.048	0.066	−0.076	0.090	0.152	−0.879	0.002	−0.001	−0.397	−0.148	0.006	−1.245**
	(0.150)	(0.070)	(0.158)	(0.335)	(0.094)	(0.603)	(0.212)	(0.086)	(0.343)	(0.263)	(0.156)	(0.439)
F.Election × Inst	0.048**	0.002	−0.001	0.012**	0.003	0.020	0.006*	0.006*	0.018**	0.009**	0.003	0.011**
	(0.017)	(0.015)	(0.020)	(0.004)	(0.003)	(0.014)	(0.003)	(0.003)	(0.006)	(0.004)	(0.002)	(0.005)
Election × Inst	−0.004	−0.007	−0.007	0.003	−0.001	−0.000	−0.006	−0.007	0.007	−0.007	−0.004*	0.006
	(0.031)	(0.020)	(0.029)	(0.006)	(0.004)	(0.014)	(0.006)	(0.006)	(0.012)	(0.007)	(0.002)	(0.015)
L.Election × Inst	0.001	−0.016	0.011	−0.004	−0.004	0.022	−0.002	0.000	0.011	0.002	0.000	0.026***
	(0.022)	(0.016)	(0.022)	(0.007)	(0.002)	(0.013)	(0.006)	(0.002)	(0.007)	(0.007)	(0.003)	(0.008)
Observations	596	575	588	601	580	593	601	580	593	601	580	593
Countries	12	12	12	13	13	13	13	13	13	13	13	13
Elections	32	30	31	34	32	33	34	32	33	34	32	33
Adjusted R^2	0.18	0.12	0.029	0.19	0.12	0.043	0.20	0.13	0.034	0.18	0.12	0.032

Robust standard errors clustered at the country level in parenthesis. All specifications include country fixed-effects and all control variables present in the baseline. The coefficients on the control variables, the constant and the seasonal fixed-effects are not reported. The sample ranges from 1996 to 2017. Checks and Balances originate from Scartascini et al. (2018). The country rankings on government effectiveness, rule of law, and voice and accountability are taken from the WGI (Kaufmann et al. 2010)

MLC, lower-middle- to low-income countries; *EQ*, equity flow; *RE*, reinvested earnings; *DT*, intra-company debt flow; *Election*, binary variable indicating the quarter of an election

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

Table 8 Subsample with GDP scaled flows (WUI)

Income group:	HIC			UMC			MLC		
Dependent variable:	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
F.WUI	0.438	0.131	−0.153	0.047	−0.012	−0.115	−0.193	−0.205*	0.119
	(0.347)	(0.126)	(0.409)	(0.058)	(0.048)	(0.093)	(0.151)	(0.104)	(0.143)
WUI	0.228	0.028	−0.287	−0.139*	−0.028	0.071	0.075	−0.080	−0.095
	(0.343)	(0.077)	(0.269)	(0.081)	(0.056)	(0.054)	(0.076)	(0.125)	(0.146)
L.WUI	0.112	0.007	−0.008	−0.033	−0.034	−0.139	−0.229**	0.174	0.328
	(0.487)	(0.058)	(0.282)	(0.104)	(0.057)	(0.084)	(0.084)	(0.119)	(0.447)
lag(EQ/GDP)	0.149***			0.681***			0.402***		
	(0.049)			(0.138)			(0.061)		
lag(RE/GDP)		0.068			0.353***			0.082	
		(0.070)			(0.106)			(0.139)	
lag(DT/GDP)			0.009			0.283***			0.129***
			(0.027)			(0.100)			(0.020)
GDPG	0.589	0.735	−0.768	0.138	−0.012	0.104	0.161	−0.162	−0.247
	(0.594)	(0.582)	(0.838)	(0.152)	(0.078)	(0.147)	(0.231)	(0.240)	(0.852)
ln(GDPPC)	0.316	0.037	0.352**	−0.308*	0.006	0.035	0.083	0.239***	0.956
	(0.377)	(0.078)	(0.167)	(0.174)	(0.029)	(0.031)	(0.138)	(0.046)	(0.766)
Trade	0.009	0.010**	0.000	0.005**	0.002	0.001	0.002	0.009***	0.014
	(0.009)	(0.004)	(0.006)	(0.002)	(0.001)	(0.001)	(0.003)	(0.002)	(0.008)
ExrateG	0.429	−0.284**	0.528	0.030	−0.109	−0.321	−0.474	−0.413	1.061
	(0.791)	(0.117)	(0.540)	(0.262)	(0.136)	(0.190)	(0.613)	(0.350)	(1.416)
ExrateVolatility	0.007	0.002	0.003	−0.000	−0.001**	0.003***	0.004**	−0.003**	0.005***
	(0.008)	(0.003)	(0.004)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)

Table 8 (continued)

Income group:	HIC			UMC			MLC		
Dependent variable:	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CPI	−0.020	−0.006**	−0.011*	0.002	0.000	−0.000	−0.004	−0.001	−0.014
	(0.012)	(0.002)	(0.006)	(0.001)	(0.000)	(0.000)	(0.003)	(0.001)	(0.012)
PoliticalStab	−0.015	−0.004*	−0.001	−0.001	−0.001	−0.001	−0.002	−0.005***	−0.028
	(0.011)	(0.002)	(0.004)	(0.002)	(0.001)	(0.001)	(0.006)	(0.002)	(0.023)
RegQual	0.012	−0.000	−0.000	0.001	0.001	0.001	0.008	0.002	0.014*
	(0.015)	(0.006)	(0.012)	(0.004)	(0.001)	(0.002)	(0.006)	(0.002)	(0.008)
Openness	−0.030	0.356	0.163	0.121	−0.078	0.052	−0.285	−0.040	−0.296
	(0.457)	(0.227)	(0.139)	(0.131)	(0.066)	(0.070)	(0.577)	(0.355)	(0.410)
Observations	2193	2191	2279	1529	1386	1481	570	549	562
Countries	33	33	33	24	24	24	12	12	12
Adjusted R^2	0.029	0.11	−0.00063	0.53	0.17	0.097	0.21	0.14	0.036

Robust standard errors clustered at the country level in parenthesis. All specifications include country fixed-effects. The constant and the seasonal fixed-effects are not shown. The sample ranges from 1996 to 2017

HIC, high-income countries; *UMC*, upper-middle-income countries; *MLC*, lower-middle- to low-income countries; *EQ*, equity flow; *RE*, reinvested earnings; *DT*, intra-company debt flow; *WUI*, world uncertainty index (Ahir et al. 2022); *GDPG*, GDP growth; *GDPPC*, per capita GDP; *ExrateG*, exchange rate growth rate; *ExrateVolatility*, exchange rate volatility; *CPI*, consumer price index; *Openness*, capital account openness index by Chinn and Ito (2006); *PoliticalStab*, political stability index of the World Governance Indicators (Kaufmann et al. 2010); *RegQual*, regulatory quality index of the World Governance Indicators (Kaufmann et al. 2010)

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

impact MNEs' perception of political uncertainty. Similar to the Rule of Law, the threshold to avoid any negative effects on FDI lies at a rank of 60.[16]

6.3 WUI as alternative measure for uncertainty

Until now, we have considered elections as an exogenous indicator for periods of high uncertainty and examined how they affect international investors. To generalize the findings, one would have to assume that elections have the same effect on FDI as any other uncertainty-generating event. However, this is unlikely to be the case. Elections are usually foreseeable events that MNE can anticipate. Yet, uncertainty can also be caused by unforeseeable events, which economic agents cannot prepare for. In this extension, we consider this possibility by utilizing the WUI by Ahir et al. (2022). The WUI measures uncertainty by counting uncertainty-related words in the quarterly country reports of the EIU. Ahir et al. (2022) show that the WUI captures uncertainty caused by a multitude of events. In particular, the WUI increases around national elections while also moving along with stock market volatility. Therefore, the index portrays not only political uncertainty around elections but also economic uncertainty on a quarterly basis. It is thus particularly suited to test whether the findings obtained using election variables are indicative of investment behavior under uncertainty in a more general sense.

We exchange the election variables in our subsample analysis for the WUI while keeping all control variables. To account for the fact that writing, editing, and publishing a country report may take a few weeks, we include the first lead, the first lag, and the current WUI in our regression.

Table 8 displays the results of the subsample analysis using the WUI as the measure for uncertainty. The WUI only significantly decreases FDI flows into UMC and MLC, which further supports **H1**. However, the results refute our hypothesis **H3**, as reinvested earnings in UMC are unaffected by increasing uncertainty. While we find a negative effect on equity investments in MLC, we also find a negative effect on reinvested earnings. Although not directly congruent with our hypothesis **H4**, this result still aligns with our expectations. After all, the project financing analysis suggested that a significant share of reinvested earnings goes into financing highly irreversible physical projects, which could explain the significant negative effect.

[16] Institutional variables strongly correlate with a countries' income level, which makes it difficult to assess whether it is the higher institutional quality that is driving our results or just the higher level of development. To eliminate this possibility, we interacted the election variable with GDP per capita. The coefficients on the interaction terms are largely insignificant, indicating that it is indeed the institutional quality that is driving our effects.

7 Conclusion

This paper investigated whether different subtypes of FDI react differently to increased policy uncertainty. Drawing on the real options theory, we expected that more liquid types of FDI are less affected by political uncertainty. To verify this assumption, we gauged the liquidity of each subtype using descriptive data and a simple estimation approach. The results suggest that FDI flows to HIC are generally more liquid than FDI flows in UMC and MLC, which may cause a greater sensitive for uncertainty in the latter two (**H1**). Furthermore, it appears that reinvested earnings are the least liquid in HIC and UMC, and equity investments are the least liquid in MLC. We therefore hypothesized that reinvested earnings are the most sensitive towards political risk in in HIC and UMC (**H2** and **H3**), whereas in MLC, equity investments take that spot (**H4**).

The results obtained in the empirical section only partly confirm these predictions. While we found support for **H1**, as MLC lose out on relatively more FDI when uncertainty arises than HIC, there was mixed support for the other hypotheses. We found confirmation for **H2** as reinvested earnings are scaled back in HIC during elections. In UMC and MLC, equity investments generally seemed to be the most sensitive. The results survived adding an extensive set of control variables and different transformations of the dependent variable. Furthermore, in terms of magnitude, the estimates blend in very well with previous scholars' findings, particularly Gossel (2020) and Chen et al. (2019). Using the WUI as a measure for uncertainty confirmed the negative effect of uncertainty on equity in UMC and MLC, which suggests that the findings obtained using election dates might be indicative of MNE's investment behavior under any situation with increased uncertainty. Therefore, we consider hypothesis **H4** verified and **H3** refuted.

Losing out on equity investments is particularly painful for developing countries, as our liquidity analysis and the FDI life cycle theory suggest that equity payments are predominantly used to initiate large-scale projects. However, we found evidence that governments have some degree of control over the detrimental effect of uncertainty. Increasing the number of veto players in the institutional framework or improving the effectiveness of the government can reassure MNEs and reduce the negative effect of uncertainty on equity investments in MLC.

Appendix 1

Table 9 Country sample

HIC		UMC		MLC
Australia	Japan	Albania	Malaysia	Bolivia
Austria	Latvia	Armenia	Mauritius	Cambodia
Belgium	Lithuania	Azerbaijan	Mexico	Cape Verde
Canada	Malta	Belarus	North Macedonia	Egypt
Chile	Netherlands	Bosnia & Herzegovina	Paraguay	El Salvador
Croatia	New Zealand	Brazil	Peru	India
Cyprus	Norway	Bulgaria	Romania	Kyrgyzstan
Czechia	Poland	Colombia	Russia	Moldova
Denmark	Portugal	Costa Rica	Samoa	Mongolia
Estonia	Slovakia	Dominican Republic	South Africa	Nigeria
Finland	Slovenia	Ecuador	Sri Lanka	Philippines
France	South Korea	Georgia	Thailand	Rwanda
Germany	Spain	Guatemala	Turkey	Ukraine
Greece	Sweden			
Hungary	Switzerland			
Iceland	UK			
Ireland	USA			
Israel	Uruguay			
Italy				

HIC, high-income countries; *UMC*, upper-middle-income countries; *MLC*, lower-middle- to low-income countries

Table 10 Summary statistics

Statistic	*N*	Mean	St. dev	Min	Pctl(25)	Pctl(75)	Max
EQ/GDP	6413	1.08	6.01	−52.53	0.10	0.78	131.60
ln(EQ)	6554	4.99	4.82	−12.64	4.09	7.96	12.90
RE/GDP	6031	0.31	0.84	−5.06	0.01	0.39	10.89
ln(RE)	6169	3.92	4.90	−10.89	1.77	7.45	11.33
DT/GDP	6298	0.42	2.32	−40.51	0.00	0.42	33.63
ln(DT)	6442	2.76	5.85	−12.66	−1.06	7.24	12.95
WUI	6237	0.06	0.06	0.00	0.02	0.09	0.54
GDPG	6047	0.03	0.11	−0.60	−0.02	0.07	1.41
GDPPC	6701	9.06	1.32	5.55	8.13	10.21	11.54
Trade	6681	85.70	42.41	15.64	56.70	105.82	326.01
ExrateG	6766	0.01	0.09	−1.00	−0.02	0.02	3.90
ExrateVolatility	6844	4.05	35.36	0.00	0.01	0.55	1,925.83
CPI	6812	95.79	37.89	0.49	77.70	109.01	533.69
Openness	6391	0.69	0.33	0.00	0.42	1.00	1.00
PoliticalStab	5965	55.96	27.28	1.01	32.23	79.05	100.00
RegQual	5965	68.12	22.45	3.43	51.66	87.02	100.00

EQ, equity flow; *RE*, reinvested earnings; *DT*, intra-company debt flow; *WUI*, world uncertainty index (Ahir et al. 2022); *GDPG*, GDP growth; *GDPPC*, per capita GDP; *ExrateG*, exchange rate growth rate; *ExrateVolatility*, exchange rate volatility; *CPI*, consumer price index; *Openness*, capital account openness index by Chinn and Ito (2006); *PoliticalStab*, political stability index of the World Governance Indicators (Kaufmann et al. 2010); *RegQual*, regulatory quality index of the World Governance Indicators (Kaufmann et al. 2010)

Table 11 Variable descriptions and sources

Variable	Description	Source
Election	Binary variable changing from 0 to 1 if an election is executed in the respective quarter	Scartascini et al. (2018)
EQ/GDP	Quarterly net incurrence of direct investment liabilities regarded as equity without reinvested earnings divided by nominal annual GDP of the previous year in percent	IMF (2020), own calculation
RE/GDP	Quarterly net incurrence of direct investment liabilities regarded as reinvestment of earnings divided by nominal annual GDP of the previous year in percent	IMF (2020), own calculation
DT/GDP	Quarterly net incurrence of direct investment liabilities regarded as debt instruments divided by nominal annual GDP of the previous year in percent	IMF (2020), own calculation
GDPG	Nominal GDP growth rate	IMF (2020)
GDPPC	Nominal GDP per capita in US-Dollar	World Bank (2020)
Trade	Sum of exports and imports relative to GDP in percent	World Bank (2020)
ExrateG	Quarterly growth of the local currency/US-Dollar exchange rate	IMF (2020), own calculation
ExrateVolatility	Standard deviation of the monthly local currency/US-Dollar exchange rate within each quarter	IMF (2020), own calculation
CPI	Consumer price index, all items	IMF (2020)
Openness	Openness measure for capital account openness by Chinn and Ito (2008). Ranges from 0 to 1, with higher values indicating fewer restrictions on international capital flows	Chinn and Ito (2006)
PoliticalStab	Political Stability and Absence of Violence/Terrorism measures the perceived likelihood of political instability and/or politically motivated violence, including terrorism. The Political Stabilities percentile rank among all countries ranges from 0 (lowest rank) to 100 (highest rank)	Kaufmann et al. (2010)
RegQual	Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Percentile rank among all countries ranges from 0 (lowest rank) to 100 (highest rank)	Kaufmann et al. (2010)
Voice and Accountability	Reflects how well citizens are able to participate in elections, the freedom of expression, and the freedom of media. Percentile rank among all countries ranges from 0 (lowest rank) to 100 (highest rank)	Kaufmann et al. (2010)
Government Effectiveness	Measures the quality of public services, the independence from external pressures, and the capability of the government to execute its commitments. Percentile rank among all countries ranges from 0 (lowest rank) to 100 (highest rank)	Kaufmann et al. (2010)

Table 11 (continued)

Variable	Description	Source
Rule of Law	Captures the extent to which citizens abide to the rules of the society, in particular contract enforcement and property rights. Percentile rank among all countries ranges from 0 (lowest rank) to 100 (highest rank)	Kaufmann et al. (2010)
Control of Corruption	Measures how much of the public power is used to generate private gains. Percentile rank among all countries ranges from 0 (lowest rank) to 100 (highest rank)	Kaufmann et al. (2010)
Checks and Balances	Represents the number of veto players within the political system at any given point in time. Ranges from 1 to 18	Scartascini et al. (2018)
WUI	Appearances of the word "uncertainty" and its variants in quarterly country reports of the Economist Intelligence Unit and relative to the length of the report	Ahir et al. (2022)

Table 12 Correlation matrix

	EQ/GDP	ln(EQ)	RE/GDP	ln(RE)	DT/GDP	ln(DT)	WUI	GDPG	GDPPC	Trade	ExrateG	Exrate-Volatility	CPI	Open-ness	Political-Stab	RegQual	Election
EQ/GDP	1																
ln(EQ)	0.21	1															
RE/GDP	0.32	−0.05	1														
ln(RE)	0.01	0.03	0.45	1													
DT/GDP	0.33	0.00	0.20	0.01	1												
ln(DT)	0.05	0.06	0.01	0.04	0.36	1											
WUI	−0.01	−0.01	0.00	0.01	−0.02	−0.02	1										
GDPG	0.00	0.00	−0.04	−0.08	−0.02	−0.02	−0.02	1									
GDPPC	−0.02	−0.02	0.12	0.12	0.03	0.02	−0.01	−0.12	1								
Trade	0.16	−0.17	0.35	−0.03	0.25	−0.04	−0.05	0.01	0.05	1							
ExrateG	0.01	0.01	−0.04	−0.06	0.00	−0.02	0.04	0.14	−0.06	0.00	1						
ExrateVolatility	−0.01	0.00	−0.03	−0.03	0.00	0.00	0.02	−0.03	−0.07	−0.05	0.09	1					
CPI	0.00	0.00	0.05	0.07	0.01	0.02	0.09	−0.10	0.12	0.06	−0.05	−0.05	1				
Openness	0.03	−0.01	0.15	0.12	0.07	0.02	−0.15	−0.11	0.53	0.03	−0.12	−0.05	0.07	1			
PoliticalStab	0.07	−0.09	0.11	−0.04	0.11	0.02	−0.07	−0.09	0.60	0.30	−0.06	−0.15	−0.06	0.45	1		
RegQual	0.04	0.03	0.14	0.11	0.08	0.06	−0.04	−0.13	0.72	0.13	−0.10	−0.15	−0.10	0.60	0.68	1	
Election	0.00	0.00	−0.03	−0.03	0.00	−0.02	−0.02	0.01	0.02	0.00	−0.01	0.01	0.00	0.02	0.03	0.02	1

EQ, equity flow; *RE*, reinvested earnings; *DT*, intra-company debt flow; *WUI*, world uncertainty index (Ahir et al. 2022); *GDPG*, GDP growth; *GDPPC*, per capita GDP; *ExrateG*, exchange rate growth rate; *ExrateVolatility*, exchange rate volatility; *CPI*, consumer price index; *Openness*, capital account openness index by Chinn and Ito (2006); *PoliticalStab*, political stability index of the World Governance Indicators (Kaufmann et al. 2010); *RegQual*, regulatory quality index of the World Governance Indicators (Kaufmann et al. 2010); *Election*, dummy variable indicating an election

Table 13 Baseline results using logarithmic flows

Dependent variable:	ln(EQ)	ln(RE)	ln(DT)	ln(EQ)	ln(RE)	ln(DT)	ln(EQ)	ln(RE)	ln(DT)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
F.Election	−0.148**	−0.057	−0.091	−0.091	−0.055	−0.027	−0.098	−0.050	−0.024
	(0.059)	(0.073)	(0.072)	(0.063)	(0.053)	(0.067)	(0.059)	(0.052)	(0.072)
Election	0.072	−0.230***	−0.109	0.091	−0.151**	−0.019	0.100	−0.150**	−0.022
	(0.074)	(0.067)	(0.092)	(0.067)	(0.070)	(0.095)	(0.069)	(0.071)	(0.096)
L.Election	−0.093	−0.120	0.017	−0.087	−0.117	0.117	−0.077	−0.135*	0.102
	(0.057)	(0.079)	(0.072)	(0.066)	(0.076)	(0.083)	(0.066)	(0.075)	(0.081)
lag(ln(EQ))				0.422***			0.402***		
				(0.058)			(0.058)		
lag(ln(RE))					0.467***			0.442***	
					(0.044)			(0.043)	
lag(ln(DT))						0.279***			0.266***
						(0.046)			(0.045)
GDPG				0.400**	0.213	−0.002	0.330**	0.230	−0.102
				(0.162)	(0.277)	(0.246)	(0.160)	(0.273)	(0.254)
ln(GDPPC)				0.502***	0.647***	1.025***	0.178	0.484***	0.507**
				(0.125)	(0.091)	(0.113)	(0.185)	(0.159)	(0.247)
Trade				−0.001	0.004**	0.002	−0.005	0.004*	−0.003
				(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)
ExrateG				−0.048	−0.964***	0.168	−0.027	−0.464	0.186
				(0.188)	(0.256)	(0.303)	(0.183)	(0.289)	(0.378)
ExrateVolatility				−0.001	0.000	0.005*	−0.001	0.001	0.005*
				(0.000)	(0.001)	(0.003)	(0.001)	(0.001)	(0.003)
CPI				0.000	0.006***	0.001	0.001	0.007***	0.001
				(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)

Table 13 (continued)

Dependent variable:	ln(EQ) (1)	ln(RE) (2)	ln(DT) (3)	ln(EQ) (4)	ln(RE) (5)	ln(DT) (6)	ln(EQ) (7)	ln(RE) (8)	ln(DT) (9)
PoliticalStab				−0.003	0.001	−0.001	−0.000	0.005	0.002
				(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)
RegQual				0.006	−0.002	−0.003	0.010	0.002	0.005
				(0.008)	(0.005)	(0.006)	(0.008)	(0.005)	(0.006)
Openness				0.215	0.328	0.329	0.150	0.116	0.326
				(0.204)	(0.251)	(0.291)	(0.198)	(0.240)	(0.275)
Observations	5004	4186	3797	3626	3127	2500	3626	3127	2500
Countries	75	74	76	75	74	74	75	74	74
Elections	311	250	233	238	191	159	238	191	159
Fixed-effects	Seasonal	Seasonal	Seasonal	Seasonal	Seasonal	Seasonal	Quarterly	Quarterly	Quarterly
Adjusted R^2	0.00080	0.0011	-0.00015	0.31	0.49	0.29	0.32	0.50	0.30

Robust standard errors clustered at the country level in parenthesis. All specifications include country fixed-effects and a constant. Seasonal effects (columns 1–6) and quarterly time effects (columns 7–9) are not reported. The sample ranges from 1996 to 2017

EQ, equity flow; *RE*, reinvested earnings; *DT*, intra-company debt flow; *Election*, binary variable indicating the quarter of an election; *GDPG*, GDP growth; *GDPPC*, per capita GDP; *ExrateG*, exchange rate growth rate; *ExrateVolatility*, exchange rate volatility; *CPI*, consumer price index; *Openness*, capital account openness index by Chinn and Ito (2006); *PoliticalStab*, political stability index of the World Governance Indicators (Kaufmann et al. 2010); *RegQual*, regulatory quality index of the World Governance Indicators (Kaufmann et al. 2010)

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

Appendix 2. Using bilateral FDI Data

Some of the previous studies chose a bilateral approach to identify the effect of political uncertainty on FDI inflows. For instance, Julio and Yook (2016) used US FDI outflows to 44 host countries from 1994 to 2010 to assess the effect of uncertainty around elections on FDI, and Choi et al. (2020) used bilateral aggregate FDI inflows to 16 OECD countries to measure the impact of the EPU on FDI between 1985 and 2013. In the following, we estimate our baseline model using bilateral data as a robustness check.

A bilateral setup has the advantage that it allows controlling for unobserved effects, especially in the sending country. However, this comes at the price of limited data coverage, which is particularly restricting in our case. To the best of our knowledge, there is no bilateral data available that allows us to distinguish between equity, reinvested earnings, and debt flows at the quarterly level. Therefore, we resort to using annual bilateral data provided by the OECD (2022). Unfortunately, only a few developed countries report data for the subtypes relevant to our research agenda. Thus, we can only check the robustness of our findings regarding HIC. In particular, we estimate the following equation:

$$\mathrm{FDI}_{j,i,t} = \beta_0 + \beta_1 \mathrm{Election}_{i,t} + \beta_2 IIA_{j,i,t} + \boldsymbol{X\theta} + \gamma_i + \varphi_{j,t} + \omega_{j,i} + e_{j,i,t} \tag{4}$$

where $\mathrm{FDI}_{j,i,t}$ stands for the equity, reinvested earnings, or intra-company debt inflow to the receiver country i from the sender country j in year t divided by i's GDP of the previous year. The indicator variable $\mathrm{Election}_{i,t}$ takes the value of one if an election is carried out in country i at year t and is zero otherwise. The term $\boldsymbol{X}$ comprises the same control variables as in our unilateral estimation. The binominal variable $\mathrm{IIA}_{j,i,t}$ indicates whether an international investment agreement is in power between i and j in year t. Finally, γ_i, $\varphi_{j,t}$, and $\omega_{j,i}$ represent host, sender-year, and bilateral fixed-effects, respectively. As recommended by Yotov et al. (2016), we estimate Eq. 4 using a pseudo poisson maximum likelihood estimator. While this means that we lose all negative observations of our dependent variable, this technique is able to handle the excessive amount of zeros in our data (Silva and Tenreyro 2006).

In columns 1–3 of Table 14, only the indicator variable for the election year is included. Consistent with our findings in the unilateral analysis, only reinvested earnings significantly decrease in an election year. This result is robust to adding a variety of control variables, as columns 4–6 show.

In columns 7–9, we swapped the election indicator for the WUI. Here again, reinvested earnings decrease when the political uncertainty increases. In contrast to our expectations, we find that equity payments increase in HIC with increasing uncertainty, as the coefficient is positive and significant. We can offer two possible explanations for this counterintuitive pattern: Firstly, excluding negative observations could potentially influence the result. Secondly, MNEs might switch to equity funding when the incoming earnings are insufficient to finance ongoing projects. Due to the inseparability of the WUI from economic fundamentals, the positive coefficient on the equity investments could indicate a switch to equity financing due to a

Table 14 Baseline results using bilateral FDI data

Dependent variable:	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP	EQ/GDP	RE/GDP	DT/GDP
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Election	−0.069	−0.102**	0.001	0.003	−0.098**	0.049			
	(0.062)	(0.041)	(0.088)	(0.054)	(0.040)	(0.078)			
WUI							0.064***	−0.099***	−0.013
							(0.019)	(0.015)	(0.041)
IIA				0.120	−0.080	−0.080	0.103	−0.002	−0.078
				(0.564)	(0.315)	(0.432)	(0.578)	(0.258)	(0.436)
GDPG				2.455***	1.300***	2.001	2.576***	1.545***	2.120
				(0.645)	(0.297)	(1.335)	(0.624)	(0.293)	(1.331)
ln(GDPPC)				1.173***	−0.021	6.055***	1.063**	0.154	5.950***
				(0.434)	(0.220)	(0.629)	(0.456)	(0.224)	(0.683)
Trade				0.013**	0.002	0.021***	0.015**	−0.002	0.023***
				(0.006)	(0.002)	(0.008)	(0.006)	(0.003)	(0.008)
ExrateG				1.497***	−0.367***	0.017	2.036***	−0.418**	−0.116
				(0.553)	(0.141)	(0.448)	(0.609)	(0.201)	(0.557)
ExrateVolatility				0.117***	−0.077***	0.087**	0.097***	−0.065***	0.094**
				(0.036)	(0.016)	(0.041)	(0.034)	(0.016)	(0.041)
CPI				−0.019	−0.042***	−0.020	−0.038***	−0.042***	−0.018
				(0.012)	(0.006)	(0.017)	(0.006)	(0.006)	(0.013)
PoliticalStab				0.008	−0.007*	−0.011	0.011**	−0.005	−0.011
				(0.005)	(0.004)	(0.009)	(0.005)	(0.004)	(0.009)
RegQual				−0.083***	−0.000	−0.002	−0.080***	−0.009	−0.004
				(0.016)	(0.006)	(0.018)	(0.016)	(0.007)	(0.019)

Table 14 (continued)

Dependent variable:	EQ/GDP (1)	RE/GDP (2)	DT/GDP (3)	EQ/GDP (4)	RE/GDP (5)	DT/GDP (6)	EQ/GDP (7)	RE/GDP (8)	DT/GDP (9)
Openness				−0.633	−1.069***	0.641	−0.500	−1.310***	0.409
				(0.507)	(0.246)	(0.602)	(0.514)	(0.281)	(0.786)
Observations	10,272	7035	7579	10,272	7035	7579	9564	6379	6854
Countries	31	31	31	31	31	31	30	30	30
Elections	58	58	58	58	58	58	53	52	53
Adjusted R^2	0.95	0.97	0.92	0.95	0.97	0.94	0.95	0.97	0.93

Robust standard errors in parenthesis. All specifications include sender-year fixed -effects, receiver fixed-effects, and bilateral fixed-effects, and are estimated with PPML. The sample ranges from 2003 to 2017

EQ, equity flow; *RE*, reinvested earnings; *DT*, intra-company debt flow; *Election*, binary variable indicating the year of an election; *WUI*, world uncertainty index (Ahir et al. 2022); *IIA*, binary variable indicating a ratified international investment agreement; *GDPG*, GDP growth; *GDPPC*, per capita GDP; *ExrateG*, exchange rate growth rate; *ExrateVolatility*, exchange rate volatility; *CPI*, consumer price index; *Openness*, capital account openness index by Chinn and Ito (2006); *PoliticalStab,* political stability index of the World Governance Indicators (Kaufmann et al. 2010); *RegQual*, regulatory quality index of the World Governance Indicators (Kaufmann et al. 2010)

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

sluggish economy in the host country. Some projects might be too expensive to put on hold and have to be financed with fresh equity when profits are scarce. Therefore, we interpret the results of the bilateral analysis as further support for hypothesis H2.

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Data availability The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declarations

Competing interests The authors declare no competing interests.

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