A Dark Side to Experience? Firm Age and Uncertainty *

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Abstract

We examine whether firm experience, measured by age, enhances or constrains corporate responses to uncertainty. Experience presents competing effects: accumulated knowledge and established routines may foster resilience, yet they can also create organizational rigidities that impede adaptation when established strategies become obsolete. Using data on 600,000 public and private firms across 64 countries over the 2004 to 2022 period, we show that older firms contract significantly more than younger firms during periods of high uncertainty. This result holds for country-specific uncertainty shocks and for the 2016 Brexit referendum, when firms with older UK subsidiaries suffered larger valuation declines. The negative effect on older firms is weaker in high-R&D industries, where the dynamic environment continually forces adaptation, limiting the accumulation of organizational rigidities. The results are not explained by firm size, financial constraints, or corporate complexity. Overall, our findings suggest that experience creates rigidities that hinder adaptation when uncertainty disrupts established corporate routines.

JEL: D80, D81, G30, G32

Keywords: Uncertainty, learning, firm rigidities, firm life cycle

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1 Introduction

Uncertainty has become a defining feature of the modern business environment. Major economic disruptions—from the 2007-2009 Global Financial Crisis to the COVID-19 pandemic and recent geopolitical conflicts—have created frequent periods of elevated political and economic uncertainty. Yet, the impact of these shocks on firms is heterogeneous: some firms adapt quickly or thrive, while others struggle and contract to varying degrees. Understanding what drives these differential effects is increasingly important for managers, investors, and policymakers.

In this paper, we investigate whether and how firm experience—measured by age—shapes firms' ability to navigate times of heightened uncertainty. While previous research documents the benefits and costs of experience in stable environments, much less is known about how these competing forces play out when uncertainty disrupts normal business operations.[1] Two opposing mechanisms may be at play. On the one hand, experience may enhance firms' resilience during uncertain periods through accumulated knowledge that improves forecasting, established routines that provide operational stability, and deeper market understanding developed over time (Benkard, 2000; Moyen and Platikanov, 2013; Berman et al., 2019; Chen et al., 2023). On the other hand, experience may be an impediment when uncertainty renders established strategies obsolete, as organizational rigidities developed through years of optimization in a more stable environment constrain firms' ability to adapt rapidly to new conditions (Loderer et al., 2017).

To study which effect dominates, we compile a large cross-country panel of private and public business group affiliates headquartered across the globe from Bureau van Dijk's Orbis database, spanning the period 2004-2022. For these firms, we measure experience by firm age and study revenues, assets, and number of employees as outcomes. We merge this data with the World Uncertainty Index (WUI) developed by Ahir et al. (2022), which captures

[1]For examples of papers on the benefits and costs of experience in stable environments, see DeAngelo et al. (2006), Hadlock and Pierce (2010), Moyen and Platikanov (2013), Adelino et al. (2017), Loderer et al. (2017), Berman et al. (2019), Chen et al. (2023).

country-year level economic and political uncertainty based on textual analysis of Economist Intelligence Unit reports. In addition, to isolate the effect of uncertainty (second moment) from that of general economic conditions (first moment), we complement our data with economic measures. The resulting firm-year panel used in our analysis includes more than 5 million observations, covering more than 600,000 unique firms across 64 countries. Our sample firms span a wide range of experience: In 2020, for instance, the average (median) firm is 22.5 (19) years old while the 10th and 90th percentiles are 6 and 43 years old, respectively. Firms face uncertainty shocks at different points throughout the sample period, allowing us to study firm outcomes through stacked staggered difference-in-difference techniques.

Across all empirical specifications, we find that experience amplifies, rather than mitigates, the negative effects of uncertainty on firm outcomes. When faced with a level of uncertainty equivalent to the 90th percentile in our sample (0.42), firms with a one standard deviation higher level of experience (15.45) exhibit a 4.88% larger decline in revenues than the median-aged firm.

Our empirical analysis proceeds in four steps. First, we explore the relationship between firm experience, uncertainty, and corporate outcomes. We find that more experienced firms contract more in periods of high uncertainty. This pattern holds across outcomes and empirical specifications, including specifications with comprehensive sets of fixed effects and interacted controls capturing the differential effect of uncertainty and economic fluctuations on firms with different sizes, financial constraints, and complexity of the business group they belong to.

Second, to strengthen our identification, we exploit a series of large, country-specific uncertainty shocks. These well-defined uncertainty shocks allow us to estimate difference-in-differences regressions, examine pre-trends, and trace the dynamics of firm responses, addressing concerns about reverse causality inherent to the previous analysis based on continuous variations in uncertainty. Specifically, we identify years in which countries in our sample experience a large increase in the level of uncertainty. Consistent with our baseline findings, we show that more experienced firms contract more in terms of revenues, assets, and

employment after such uncertainty shocks; this contraction does not pre-date the uncertainty shocks and sets in gradually over the following years.

We then turn to potential channels that may explain why older firms contract more following uncertainty shocks. Consistent with the importance of a rigidity channel, we find that the negative effect of experience is attenuated in R&D intensive industries, where the dynamic environment continually forces adaptation, limiting the accumulation of organizational rigidities. The results thus suggest that while experience can typically enhance performance through accumulated learning and higher efficiency, it may hinder adaptation when uncertainty disrupts established knowledge and routines—particularly in industries where learning is more routinized.

A potential concern with our results is that our measure of firm experience might be masking other drivers that make these firms find it harder to adjust in times of high uncertainty. Older firms could be larger, which could hinder their ability to adapt. These firms could belong to larger business groups and within these structures, firms may be subject to coordination challenges that slow down their response to uncertainty. Moreover, even though older firms may enjoy better access to capital markets, younger firms may have a capital structure that allows them to pursue growth opportunities in uncertain times. We mitigate these concerns by showing that our results are robust to controlling for the effect of uncertainty on firms of different size, business group complexity, and financial constraints, as well as to the inclusion of fixed effects that restrict comparisons to within each firm-size group, among other tests.

In a final test, we ask whether the observed contraction of experienced firms in times of economic uncertainty has value effects at the business group level. Contractions could be value-destroying, but they could also be the result of optimal resource reallocation within business groups or optimal exercise of the option to wait (Guiso and Parigi, 1999; Bloom, 2009). To test whether the contraction observed among experienced firms is value-destroying at business group level, we study stock returns around the Brexit referendum, which triggered a sudden and unanticipated spike in uncertainty for firms operating in the UK. Among

more than 12,700 publicly listed groups, we find that those with older UK subsidiaries experience significantly more negative returns than those with younger UK subsidiaries after the referendum. Economically, a firm with a UK subsidiary of above-median age lost 0.73% ($110.8 million) more value than a comparable firm with a younger UK subsidiary. Thus, the contractions we observe among experienced firms appear to reflect that, on average, uncertainty is more value-destroying for these firms than for less experienced ones, though optimal adjustments within business groups may offset some of the effect.

This paper contributes to several strands of the literature. First, we contribute to the literature on corporate outcomes under uncertainty. Work by Bloom (2009) finds that uncertainty creates a "pause-and-restart" pattern in hiring and investment, while Gulen and Ion (2016) show that policy uncertainty can depress corporate investment by inducing precautionary delays due to investment irreversibility. More recently, Kumar et al. (2023) use a randomized controlled trial to show that, as perceived uncertainty increases, firms reduce employment, investment, and their sales decline, and that the effect is heterogeneous across several firm-level characteristics, such as size and level of competition. These findings are consistent with the insights provided by the real options literature that highlight the role played by the value of waiting (McDonald and Siegel, 1986; Dixit and Pindyck, 1994). We contribute by showing that experience plays a key role in how firms respond to uncertainty shocks. Older firms exhibit significantly larger contractions, suggesting that these firms develop rigidities that hinder their ability to adapt in times of high uncertainty.

Second, we extend a strand of the corporate lifecycle literature that has examined how firm experience relates to corporate policies and performance. Though younger firms exhibit higher net employment creation in response to local shocks (Adelino et al., 2017) and have higher growth rates, they also face greater financial constraints (Hadlock and Pierce, 2010) and a greater investment-profit sensitivity (Moyen and Platikanov, 2013). Older firms on the other hand display lower investment opportunities but greater financial stability (DeAngelo et al., 2006), and become more inflexible as they gain experience, which is attributed to focusing on efficiency over potential growth opportunities (Loderer et al., 2017). Fur-

ther, learning enhances investment efficiency (Chen et al., 2023) and operational capabilities (Berman et al., 2019). We contribute to this literature by showing that these lifecycle effects vary with uncertainty. Specifically, the traditional lifecycle advantages enjoyed by more experienced firms become detrimental in uncertain times, among others because older firms' established routines are unsuitable for rapidly changing conditions.[2]

Third, our work contributes to the literature on uncertainty by providing evidence on heterogeneous firm responses to aggregate shocks. The uncertainty literature in macroeconomics has increasingly focused on how financial frictions amplify and propagate uncertainty shocks (Christiano et al., 2014; Gilchrist et al., 2014). Recent work shows how real and financial frictions amplify, prolong, and propagate the negative impact of uncertainty shocks, but typically assumes homogeneous firm responses within sectors. Our findings suggest that firm age is associated with additional "frictions" that affect how uncertainty shocks transmit through the economy. As a result, older firms' rigidity may lead economies with older industrial structures to experience greater aggregate contractions during uncertain periods.

Finally, we contribute to the international finance literature by documenting how subsidiary-level characteristics affect multinational firms' exposure to political and economic risks. While the political risk literature has traditionally focused on country-level institutional factors (Bekaert et al., 2014; Julio and Yook, 2012; Atanassov et al., 2024), recent work has begun examining firm-level heterogeneity in political risk exposure (Hassan et al., 2019; Campello et al., 2022; Bena et al., 2022; Hassan et al., 2024). Our analysis provides novel evidence that the experience profile of foreign operations systematically affects parent firm valuations during political uncertainty events. This suggests that multinational firms face a trade-off when establishing foreign operations: while experienced local subsidiaries may provide operational advantages in stable periods, they can become sources of heightened political risk exposure during uncertain times.

[2]A related line of work shows that other forms of experience, specifically, personal CEO experience, can affect decision making and risk-taking (see, e.g., Malmendier and Tate (2005); Malmendier et al. (2011); Malmendier and Nagel (2011)). Our focus is on organizational traits—specifically, knowledge and rigidities—accumulated by firms as they age, and how these traits affect the performance of firms under uncertainty.

Taken together, our results show that uncertainty shocks disproportionately affect experienced firms, particularly in less R&D-intensive sectors. This pattern points to a dark side of organizational learning: the same accumulated knowledge and routines that enhance efficiency in stable environments can become costly rigidities during times of uncertainty. Our findings suggest that if uncertainty shocks disproportionately affect experienced firms—which tend to be larger employers and more systemically important—then the aggregate costs of uncertainty may be higher and more persistent than implied by the average effects from previous micro-level evidence. Thus, efforts to reduce uncertainty may have particularly large benefits in economies with older industrial structures.

2 Data and Methodology

In this section, we describe the data sources and the methodology used to study the role played by firm-level experience in navigating uncertainty.

2.1 Data

We describe our measure of political and economic uncertainty, followed by a detailed discussion of the firm-level data and supplementary datasets used in our analysis.

2.1.1 Uncertainty

We measure uncertainty using country-level information from the World Uncertainty Index (WUI) developed by Ahir et al. (2022). The WUI is constructed at a quarterly frequency for 143 countries and is based on the frequency of the term "uncertain" (and its linguistic variants) in Economist Intelligence Unit country reports, normalized by the total number of words in the report. Higher index values reflect greater levels of uncertainty. This measure has been increasingly adopted in recent empirical studies to assess the macroeconomic consequences of uncertainty (e.g., Altig et al. (2020); Baker, Davis and Levy (2022); Baker et al. (2024)).

A key advantage of the WUI relative to alternative uncertainty measures is its extensive cross-country coverage over a long historical window, and specifically its overlap with our firm-level sample period (2004 to 2022). For illustration, in Figure 1, we present the GDP-weighted average WUI across 71 countries for the period 2004–2025. The figure highlights substantial time-series variation, with pronounced spikes during the U.S. fiscal cliff budget crisis in 2012, the Brexit referendum in 2016, the U.S.-China trade conflict in 2019, the COVID-19 pandemic, and the recent trade and tariffs discussions paired with their corresponding geopolitical tensions. In Figure A.1, we plot the country-level uncertainty index for the main countries in our sample.

For compatibility with annual firm-level data, we aggregate the WUI from quarterly to annual frequency by dividing the frequency of the term "uncertain" (and its linguistic variants) in Economist Intelligence Unit country reports over the year by the total number of words in the reports over the same period and rescale it by multiplying by 1,000.[3]

2.1.2 Firm-level data

Our analysis draws on firm-level data from Bureau van Dijk's Orbis database, which contains financial information for private and public firms globally. Unlike prior studies that build panels from periodic snapshots of Orbis DVD/external-drive releases, we use the recently introduced historical Orbis product (specifically, the late-2023 vintage), which provides a continuous and internally consistent panel. We include all firms outside of the financial sector with non-missing industry classification, as well as non-missing non-negative total revenue, total assets, and number of employees, and a minimum firm size (e.g., revenues and assets above $100,000 and number of employees above 5). We apply further data cleaning filters recommended by Kalemli-Ozcan et al. (2023). We also restrict our analysis to firms

[3]To ensure that our subsequent results are not primarily influenced by economic activity rather than uncertainty, we briefly examine the relationship between changes in uncertainty and changes in GDP, as well as GDP per capita. During our sample period across all countries, the correlation coefficient between changes in uncertainty and changes in logged country-level GDP is small ($\rho = -0.03$), while the corresponding coefficient between changes in uncertainty and changes in logged GDP per capita is -0.13. Nonetheless, to isolate the effect of uncertainty beyond any potential changes in economic activity, we control for logged GDP per capita and its interaction with firm experience throughout our analysis.

that are part of a business group since these firms are (i) more comparable with each other, (ii) among the most productive in their respective economies, and (iii) less likely financially constrained, alleviating concerns that this is driving our results. We keep all countries with at least 100 firm-year observations over the sample period, but we show that our results also hold when we restrict the sample to OECD countries, i.e., a set of countries with relatively homogeneous institutional settings.

Our final sample comprises more than 5 million firm-year observations, representing over 637,000 unique firms from 64 countries. It starts in 2004 (prior to which Orbis coverage is limited) and ends in 2022. In robustness tests, we run our analysis in a sample ending in 2019, thereby excluding the impact of the COVID-19 crisis, during which the rise in uncertainty originated from an exceptional source and impacted firms across the globe in multiple ways. We enrich these data with Orbis ownership data, which provides extensive coverage from 2007 to 2022 and backfill ownership data for firms that existed prior to 2007 (though starting our sample in 2007 also does not affect our results).

Our main measure of experience is firm age in 2024—calculated as 2024 minus the incorporation year.[4] This follows ideas in Moyen and Platikanov (2013) who use age as a proxy for learning within a firm, and Loderer et al. (2017), who use age as a proxy for the accumulation of rigidities that impede the firm to exploit growth opportunities. In Figure A.2, we plot the distribution of the number of firms across countries in the final sample. Figure A.3 displays box plots of firm incorporation years (including 25th and 75th percentiles), highlighting its variation across countries. Across the full sample, the mean incorporation year is 1993, and the 25th, 50th, and 75th percentiles are 1971, 1997, and 2009 respectively.

Our primary firm-level outcomes are related to levels of corporate activity, specifically, revenues, total assets, and number of employees. Table 1, Panel A, reports summary statistics for these and other variables. The average firm in our sample has $46 million in revenues,

[4]In practice, our measure captures the firm's cohort. However, the transformation assigns greater value to older cohorts, thereby facilitating the interpretation as experience. In further tests, we show that our results are robust to measuring age dynamically as the natural logarithm of the age of the firm at the time of the observation.

$43 million in assets, and employs 149 individuals. These distributions are skewed: median revenues and assets are $8 million and $6 million, respectively, and the median number of employees is 36. We use natural logarithms of all size measures in our regression specifications for ease of interpretation and comparability. In Table 1, Panel B we provide a correlation matrix for the main variables in our study, which shows that our measure of experience is not highly correlated with other firm-level measures.

2.1.3 Other data

We compute industry R&D intensity as the median ratio of R&D expenses over sales by NAICS 3-digit industry using Worldscope data for OECD public firms, following Moyen and Platikanov (2013). GDP per capita data is obtained from the World Bank and corporate complexity measures derive from Orbis ownership data. For the Brexit analysis, we extract daily returns from Datastream/Worldscope for public firms headquartered in OECD in 2016. We compute daily raw returns as well as one-factor abnormal returns. Abnormal returns are estimated via rolling-window regressions using a $[-230, -30]$ estimation window prior to each respective trading day in 2016, controlling for market excess returns (obtained from Kenneth French's data library). We exclude stale prices (i.e., non-moving monthly prices) and require a minimum of 100 non-missing daily observations per firm.

2.2 Methodology

In this section, we describe the methodology used in our analysis, and in particular: (i) how we document the relationship between uncertainty, firm experience, and firm outcomes, (ii) how we exploit large uncertainty shocks to establish a causal link and examine the differential impact of uncertainty on firms with distinct cross-sectional characteristics, and (iii) how we make use of the Brexit referendum as a shock to uncertainty that allows us to examine firm value implications.

2.2.1 Baseline analysis

We begin by examining how firm experience affects the relationship between uncertainty and corporate outcomes using the following specification:

$$\begin{aligned} Y_{i,c,s,t} =& \alpha_i + \alpha_{c,s,t} + \beta_1 \text{Uncertainty}_{c,t} \times \text{Experience}_i \\ &+ \beta_2 \text{Economic Development}_{c,t} \times \text{Experience}_i + \varepsilon_{i,c,s,t}, \end{aligned} \tag{1}$$

where $Y_{i,c,s,t}$ is an outcome of interest (log of revenues, log of assets, or log of employment count) for firm i headquartered in country c operating in industry s at time t. $\text{Uncertainty}_{c,t}$ is the World Uncertainty Index for country c in year t, Experience_i is firm experience measured as the logarithm of the firm age at the end of the sample (i.e, in year 2024), and $\text{Economic Development}_{c,t}$ is the logarithm of GDP per capita of country c at time t, included to separate the effect of uncertainty (second moment) from that of general economic conditions (first moment) on firms with different levels of experience. Our baseline specification includes firm (α_i) and country $\times$ industry $\times$ year ($\alpha_{c,s,t}$) fixed effects. In additional tests, we further saturate the model with parent country $\times$ year fixed effects to control for differential shocks affecting subsidiaries of business groups based in different countries, as well as the interactions between Uncertainty and a measure of initial firm size (the logarithm of the firm's assets in the first year it appears in the sample) and between economic development and such measure of initial firm size. These interacted terms control for the differential exposure of firms of varying size to uncertainty and economic changes. They therefore ensure that the coefficient on Experience $\times$ Uncertainty is not contaminated by the sensitivity to uncertainty (or economic conditions) of other variables correlated with firm size. Standard errors are double-clustered at the country and year levels. The outcomes of interest are measured at the end of the year, while the uncertainty index aggregates quarterly data for that same period. Our coefficient of interest is β_1, which measures how experience impacts the effect of uncertainty on firm outcomes.

2.2.2 Identification from uncertainty spikes

To strengthen our identification, we exploit large, country-specific spikes in uncertainty by estimating the following difference-in-differences specification:

$$\begin{aligned} Y_{i,c,s,t} =& \alpha_i + \alpha_{c,s,t} + \beta_1 \text{Uncertainty Shock}_{c,t} \times \text{Experience}_i \\ &+ \beta_2 \text{Economic Development}_{c,t} \times \text{Experience}_i + \varepsilon_{i,c,s,t}, \end{aligned} \tag{2}$$

where $Y_{i,c,s,t}$ is a logged outcome of interest for firm i, operating in country c, industry s at time t. Uncertainty $\text{Shock}_{c,t}$ is an indicator variable set to one when the level of uncertainty in a given country reaches a level equivalent to three standard deviations of the uncertainty distribution and for the five subsequent years. Firms that never experience these shocks are tracked over the full sample period. Experience_i is the same measure of firm experience as in the baseline analysis (the logarithm of firm age at the end of our sample). As before, we interact a measure of the first moment, Economic $\text{Development}_{c,t}$ with our measure of Experience_i to control for the heterogeneous effect of the overall economic condition on firms with different levels of experience. Similar to Equation (1), the specification includes firm fixed effects to control for firm-specific time-invariant characteristics and country $\times$ industry $\times$ year fixed effects to control for shocks at the country and industry level, and Uncertainty $\text{Shock}_{c,t}$ interacted with the measure of initial firm size. Standard errors are again double-clustered at the subsidiary country and year levels.

The specification in Equation (2) allows us to explore the differential impact of country-specific uncertainty shocks on firms with different levels of experience. To rule out the possibility that the results are based on a violation of the parallel trends assumption, we also present the results of a dynamic difference-in-differences estimation in which we replace Uncertainty $\text{Shock}_{c,t}$ by indicator variables that denote the years to/since the country-specific uncertainty shock. For robustness, we additionally estimate a variation of Equation (2) using stacked difference-in-differences regressions, following Gormley and Matsa (2011, 2016), Sun

and Abraham (2020), and Callaway and Sant'Anna (2021), among others.

2.3 Event study

We complement our firm-year-level panel regressions with an event study that examines the short-term stock market response to the Brexit Referendum on June 23, 2016. We estimate:

$$\begin{aligned} Y_{i,c,s,t} =& \alpha_i + \alpha_{c,s,t} + \beta_1 \text{Older UK Sub}_i \times \text{Referendum}_{[a;b]} \\ &+ \beta_2 \text{Younger UK Sub}_i \times \text{Referendum}_{[a;b]} + \varepsilon_{i,c,s,t}, \end{aligned} \tag{3}$$

where $Y_{i,c,s,t}$ is a stock return of firm i, operating in country c and industry s, on day t. $\text{Referendum}_{[a;b]}$ denotes days that fall within an event window around June 23, 2016. Older UK Sub_i and Younger UK Sub_i are indicator variables that denote whether a public firm's oldest UK subsidiary was above- or below-median age in 2015 (i.e., the year before the referendum). The specification includes firm fixed effects (α_i) to control for firm-specific time-invariant characteristics and country $\times$ industry $\times$ day fixed effects ($\alpha_{c,s,t}$) to control for shocks at the home country-industry-day level. The omitted category against which the effects are measured are public firms without UK subsidiary. The sample is restricted to trading days in 2016 and we remove penny stocks as well as stocks with stale prices. In addition to studying raw returns, we also estimate Equation (3) where $Y_{i,c,s,t}$ is a firm's one-factor alpha on day t. This one-factor alpha is measured from seemingly unrelated regressions estimated over window $[-30; -230]$ for stocks with at least 100 return observations over that event window, using excess market return with market and risk-free rates drawn from Kenneth French's data library. Standard errors are clustered at the firm level.

In Equation (3), the coefficients of interest, β_1 (β_2), denote the daily return of a firm with older (younger) UK subsidiary over and above firms without UK subsidiary. Event window returns are obtained by multiplying these coefficients by the number of days in the event window.

3 Results

This section presents our core findings on how firm experience moderates the impact of uncertainty on firms. We begin by documenting the relationship between experience and firm performance during periods of heightened uncertainty, tighten identification in a setting with country-specific uncertainty shocks, and highlight a potential mechanism for our results. Last, we provide evidence suggesting that the contractions of older firms observed during periods of high uncertainty are value-destroying and not merely the result of reallocation of resources within business groups or value-creating exercising of an option to wait.

3.1 Experience, Uncertainty, and Firm Outcomes

We first examine the relationship between experience, uncertainty, and firm outcomes, using Equation (1) as the baseline. In Table 2, all specifications include the interaction between firm experience and country-year-level uncertainty as well as the interaction between experience and country-year-level economic development. They also control for country-industry-year fixed effects that absorb the main effects of uncertainty and economic growth as well as firm fixed. The results show that, across all outcomes, firms with greater experience contract more during periods of greater uncertainty (columns (1) to (3)).

Since experience may correlate with firm size—and since size may shape the corporate response to uncertainty—we next include the interactions between initial firm size and uncertainty as well as between initial firm size and economic development. We further include parent country-year fixed effects to account for potential heterogeneity in macroeconomic conditions experienced by firms' parent companies that may correlate with firm experience. We find that these potentially confounding characteristics do not explain the negative relation between experience and uncertainty (columns (4) to (6)).

The relationship between firm experience and outcomes under uncertainty is economically meaningful. When faced with a level of uncertainty equivalent to the 90th percentile in our sample (0.42), firms with a one standard deviation higher level of experience (15.45) exhibit

a 4.88% larger decline in revenues than the median firm.[5]

We perform a range of robustness tests to address potential concerns related to sample composition, measurement, and specification choices. First, to ensure our findings are not driven by a single country, we re-estimate our baseline regression excluding one country at a time. Figure A.4 shows that the coefficient on Uncertainty × Experience remains stable across sub-samples. Second, we show that the results are robust to a rolling measure of age (Table A-1) and to an alternative, discrete measure of experience. Splitting firms into age quintiles instead of using a continuous variable, we find similar results (Table A-2). We also show that our results are robust to excluding the COVID-19 pandemic period (Table A-3, columns (1) to (3)) and to limiting the sample to OECD countries, where institutional settings are more comparable (Table A-3, columns (4) to (6)). Third, we introduce additional fixed effects to mitigate concerns about the correlation between firm size and firm age. Specifically, within each industry and country, we split firms into size quintiles based on their initial size. We then include size × industry × year fixed effects in our specification. The results, shown in Table A-4, are largely unaffected.

Next, we examine two groups of potentially confounding firm-level characteristics: complexity and financial constraints. First, older firms may belong to larger business groups with multiple subsidiaries and complex structures involving multiple organizational layers. Within these structures, subsidiaries may be subject to coordination challenges that slow down the corporate response to economic uncertainty, which may explain the adverse response to uncertainty. Using Orbis ownership data, we construct measures of group complexity for each sample firm—including number of subsidiaries within the business group, layer of the firm within its group, and average layer of firms within the group. We then include these variables, interacted with uncertainty and with economic development, in the baseline specifications. Second, even though older firms may enjoy better access to capital markets, younger firms may have a capital structure that allows them to pursue growth opportunities in uncertain

[5]This results from multiplying the level of uncertainty (0.42) by the coefficient in Table 2, column 4 (0.172), and the difference in experience $\ln(16 + 15.45) - \ln(16)$.

times. We test this by including the leverage ratio, as measured by long term debt over assets, interacted with uncertainty and with economic development. Table A-5 shows that the negative and significant coefficient on the interaction term between firm experience and uncertainty persists when controlling for measures of corporate complexity and financial constraints for Revenues (Panel A), Assets, (Panel B), and Employment (Panel C).

Taken together, the findings in this subsection suggest that experience may be detrimental, not beneficial, during uncertain times. A potential explanation for this result is that, as older firms learn, they also become more rigid and adapt slower than younger ones. This notion is consistent with the idea in Loderer et al. (2017), where, as firms age, they focus on optimizing operations and become less flexible. In addition, we find that older firms also benefit relatively less from GDP growth, evidence consistent with Adelino et al. (2017), who find that new and younger firms grow more following local economic shocks.

3.2 Uncertainty Shocks

Our results in the previous subsection focus on the relationship between levels of uncertainty and firm-level outcomes. In this section, we take a different approach in which we establish a relationship between experience and responses to uncertainty shocks using country-level high-uncertainty events. To this end, we construct an indicator variable set to one when the level of uncertainty within a country increases to more than three standard deviations of the uncertainty distribution. That is, given that the measure of uncertainty has a standard deviation of 0.17 (Table 1), our indicator variable is set to one in country-years in which the level of uncertainty breaches a level of 0.51 for the first time, and in the five years following the shock. As shown in Figure A.5, these uncertainty shocks are well distributed over the sample period.

We repeat the analysis following the specification depicted in Equation (2), where we replace the level of uncertainty in Equation (1) with an indicator for large shocks. We present the results in Table 3, columns (1) to (3), showing that large uncertainty shocks are associated with a more negative response among more experienced firms compared to less

experienced ones. The results are robust to the inclusion of controls on size and to additional sets of fixed effects (columns (4) to (6)).

In Figure 2, we illustrate the dynamic coefficients of the analysis of the effect of uncertainty shocks on more versus less experienced firms in event time. Two important patterns emerge. First, prior to the uncertainty shocks, we find no differential effect on revenues (Panel A), assets (Panel B), and number of employees (Panel C) of more versus less experienced firms, consistent with the absence of pre-trends. Second, more experienced firms exhibit significant and increasingly worsening outcomes following an uncertainty shock.

Following the recent advances in the difference-in-differences literature, the staggered nature of the shocks, and the presence of two-way fixed effects in our regressions, we repeat our analysis using the stacked regression estimation developed by Gormley and Matsa (2011, 2016) and described in Baker, Larcker and Wang (2022) to address potential biases. We present the results in Table 4, where we find results that are largely consistent with the previous ones.

Overall, the results of this subsection support the idea that, in response to increased uncertainty, experienced firms contract more than less experienced firms. Next, we turn our attention to the potential drivers of these heterogeneous effects of uncertainty on firm outcomes.

3.3 R&D and Organizational Rigidity

Having established that firm experience amplifies the negative effects of uncertainty, we now examine whether this pattern reflects organizational rigidities created by accumulated learning. The organizational learning literature highlights how path-dependent capabilities can become "competency traps" when environments change rapidly (Leonard-Barton, 1992; Levinthal and March, 1993) and that rigidities arise as firms age (Loderer et al., 2017). Experienced firms develop specialized knowledge, routines, and organizational structures at least in part based on historical operating conditions. When uncertainty renders this accumulated knowledge obsolete, these firms face higher switching costs to adapt to new

conditions compared to younger firms that have less sunk investment in outdated approaches. However, this rigidity effect should vary systematically across industries based on the rate of knowledge depreciation. In dynamic industries characterized by rapid technological change and frequent market disruptions, firms must continuously update their knowledge base and maintain flexible organizational structures to survive. Consequently, firms in these industries should be less susceptible to rigidity-induced problems during uncertainty shocks, as they have developed institutional mechanisms to prevent the accumulation of obsolete knowledge and rigid routines.

We test this channel by examining how the relationship between firm experience and uncertainty varies with industry dynamism, proxied by R&D intensity. Following Comin and Philippon (2005) and Moyen and Platikanov (2013), we use R&D intensity as a measure of knowledge depreciation rates and technological volatility. Industries with high R&D intensity are characterized by rapid innovation cycles, frequent creative destruction, and continuous learning requirements—conditions that prevent the accumulation of rigidities. We measure R&D intensity as the median ratio of R&D expenses to sales within each NAICS 3-digit industry-year, providing time-varying measures that capture evolving technological dynamism across sectors.

We present the results of this analysis in Table 5, where we expand the baseline framework from Equation (1) by introducing a triple interaction between firm experience, uncertainty, and our measure of R&D intensity at the industry level. The coefficient on Uncertainty $\times$ Experience remains significantly negative across all specifications, confirming that experienced firms contract more during uncertain periods. At the same time, we find that the triple interaction term Uncertainty $\times$ Experience $\times$ Industry R&D, is positive and statistically significant across all outcome measures. This suggests that high R&D intensity significantly attenuates the negative effect of experience during uncertain times. In terms of magnitudes, firms in industries with a one standard deviation higher R&D-to-sales ratio (0.047) experience a mitigation in the uncertainty effect of approximately one-third of the baseline level. We find similar results using our uncertainty shock identification strategy

(Table 6) and the stacked regression approach (Table 7), obtaining quantitatively similar results across all specifications.

3.4 Value Implications

Our prior results show that experienced firms contract more during uncertain periods, but these findings alone cannot distinguish between value-destroying rigidity inherent in experienced firms, potentially optimal resource reallocation within business groups, and exercise of the option to wait. For instance, experienced firms may be more able to strategically shift resources from high-uncertainty regions to more stable markets, making operational contractions consistent with value maximization at the group level rather than organizational inefficiency. Similarly, experienced firms may be more able to exploit the option value of waiting, which would translate into contraction at the time of an uncertainty shock.

To address this fundamental challenge, we examine stock market reactions to a likely exogenous uncertainty shock that allows us to directly assess whether operational responses create or destroy shareholder value among more experienced firms vis-à-vis less experienced firms. Specifically, we exploit the June 23, 2016 Brexit referendum, which provides a plausible quasi-natural experiment for several reasons. First, the referendum outcome was largely unexpected—betting markets and polls showed a narrow "Remain" victory as the most likely outcome until voting results became available and revealed a "Leave" victory. Second, the referendum triggered an immediate and substantial spike in UK-specific uncertainty, as evidenced by sharp increases in the uncertainty index for the UK (Figure A.1). Third, the timing allows precise identification of the uncertainty shock, enabling clean measurement of market responses in narrow event windows.

We conduct an event study as specified in Equation (3), examining stock returns around the Brexit referendum for public firms with and without UK subsidiary in the year prior to the referendum. Importantly, Brexit created differential exposure to uncertainty based on whether public firms had UK subsidiaries or not. Additionally, there is cross-sectional variation in subsidiary age, allowing us to test whether the market views experience of a UK

subsidiary as value-enhancing or value-destroying. Our sample includes 12,761 OECD-based publicly listed firms with available return data in 2016. Our main specification (Table 8, Panel A) comprises all public firms and focuses on days [0,1] around the referendum. We also provide results for alternative event windows (Panel B) and for a sample that excludes public firms located in the UK (Table A-8).

The coefficients in column (1) show that firms with older UK subsidiaries experience significantly more negative raw returns (−0.666%), than those with younger subsidiaries (−0.305%). The 36-basis point difference between these coefficients is economically meaningful and statistically significant, and robust to the inclusion of additional fixed effects that account for the possibility of country- and industry-level shocks that might impact UK-exposed public firms (columns (2) to (3)). In columns (4) to (6), we repeat the analysis for abnormal returns. Considering the full specification, firms with younger UK subsidiaries experience no significant abnormal return response (−0.010% per day). However, those with older subsidiaries suffer a significant negative abnormal return of 0.376%. As before, the difference in returns is large in magnitude and statistically significant.

The difference in returns also translates into a significantly different absolute market value response. Over the two trading days included in the event window, firms with older UK subsidiaries lose $112.2 million in market value on average ($31.5 million in median), compared to just $1.4 million ($0.3 million) for firms with younger subsidiaries. Panel B extends the event window to 3, 5, 10, 20, and 30 days post-Brexit and confirms the persistence of the negative differential effect for older subsidiaries.

Figure 3 presents dynamic event study results examining daily cumulative abnormal returns from 15 days before to 15 days after the referendum. Several patterns emerge. First, there are no systematically different and economically significant pre-trends for firms with or without a UK subsidiary, supporting the exogeneity and economic significance of the Brexit referendum (Panel A). Second, the negative differential for older subsidiaries emerges immediately on June 23, consistent with markets quickly assessing the implications of increased uncertainty for more experienced firms (Panels B and C). Third, the differential

effect persists over the full post-event period.

We provide several robustness tests. First, results are virtually identical when excluding UK-headquartered firms, confirming that the effects are not driven by direct domestic exposure (Table A-8). Second, we verify that our results are not driven by differences in industry composition between firms with older versus younger subsidiaries. The inclusion of day $\times$ country $\times$ sector fixed effects controls for systematic industry differences in sensitivity to Brexit. Finally, we consider whether the results may reflect differences in firms' ability to hedge Brexit exposure. If experienced firms were simply better positioned to hedge uncertainty through financial markets or operational diversification, we might observe less negative returns despite greater fundamental exposure. The fact that we observe more negative returns for experienced firms contradicts this alternative explanation.

Together, the findings in this subsection provide support for the idea that firm experience magnifies the adverse impact of uncertainty on firms not only with respect to activity (measured by revenues, assets, and employees) but also with respect to firm value. Overall, these results suggest that uncertainty has a significant negative effect on older firms, and that our previous findings do not correspond to a reallocation of activities across subsidiaries within business groups or exercise of the option to wait.

4 Conclusion

Using a global panel of over 600,000 firms from 64 countries, we show that older firms exhibit significantly larger contractions during periods of heightened uncertainty. We provide cross-sectional evidence suggesting that organizational rigidity drives these effects. The negative experience impact is attenuated in R&D-intensive industries, where continuous change limits the accumulation of organizational rigidities. Using stock market reactions during the Brexit referendum, we find that business groups with older UK subsidiaries experience more negative returns, suggesting that the adverse implications of subsidiary-level contractions more than offset the potentially positive effects of strategic resource reallocation within the business

group.

Taken together, our results show that uncertainty shocks disproportionately affect experienced firms, particularly in less R&D-intensive sectors. This pattern points to a dark side of organizational learning: the same accumulated knowledge and routines that enhance efficiency in stable environments can become costly rigidities during times of uncertainty. Consequently, economies dominated by older firms may experience deeper and more persistent contractions during periods of uncertainty, more so when these economies are dominated by less R&D-intensive sectors. As a result, efforts that reduce uncertainty and strengthen corporate adaptability might help mitigate some of the adverse effects of uncertainty documented in this paper.

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Figure 1: **World Uncertainty Index**

This figure plots the quarterly World Uncertainty Index for 71 countries, weighted by GDP. Data are from Ahir et al. (2022). The WUI is computed by counting the frequency of the word "uncertain" (or its variant) in the Economist Intelligence Unit country reports, scaled by the total number of words in the report. The WUI is then rescaled by multiplying by 1,000,000.

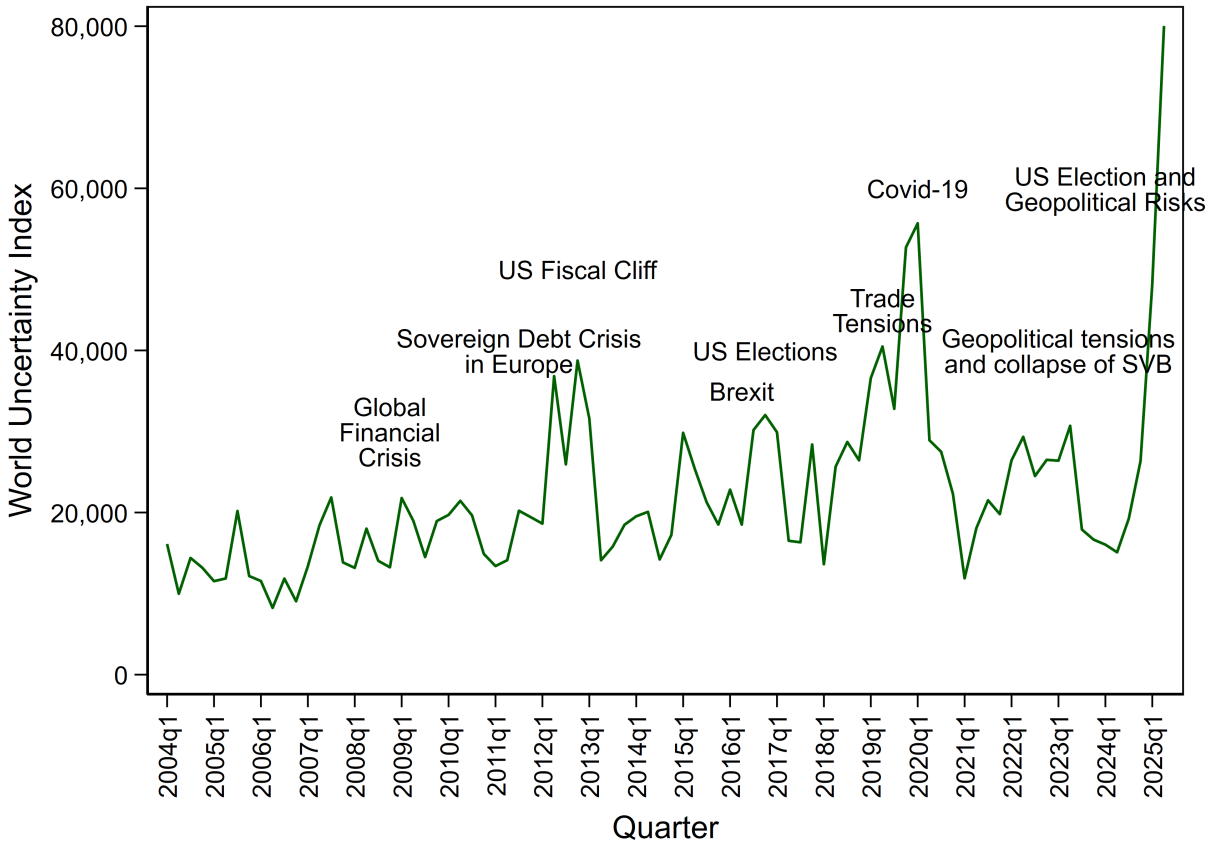
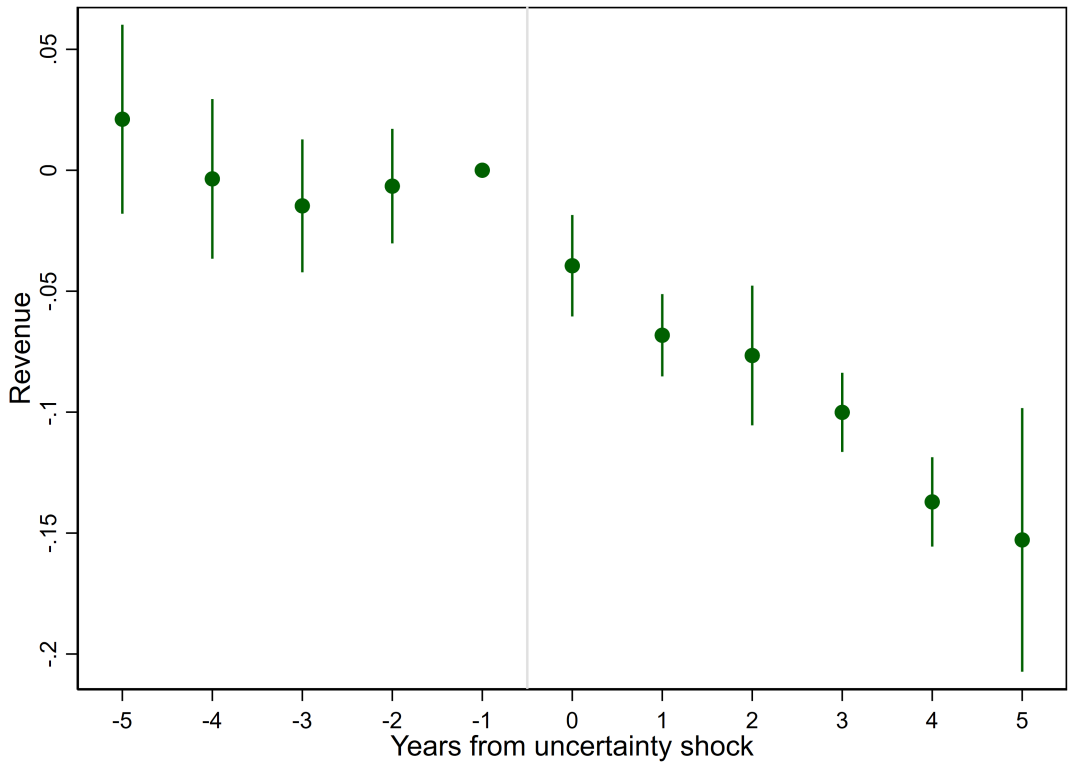


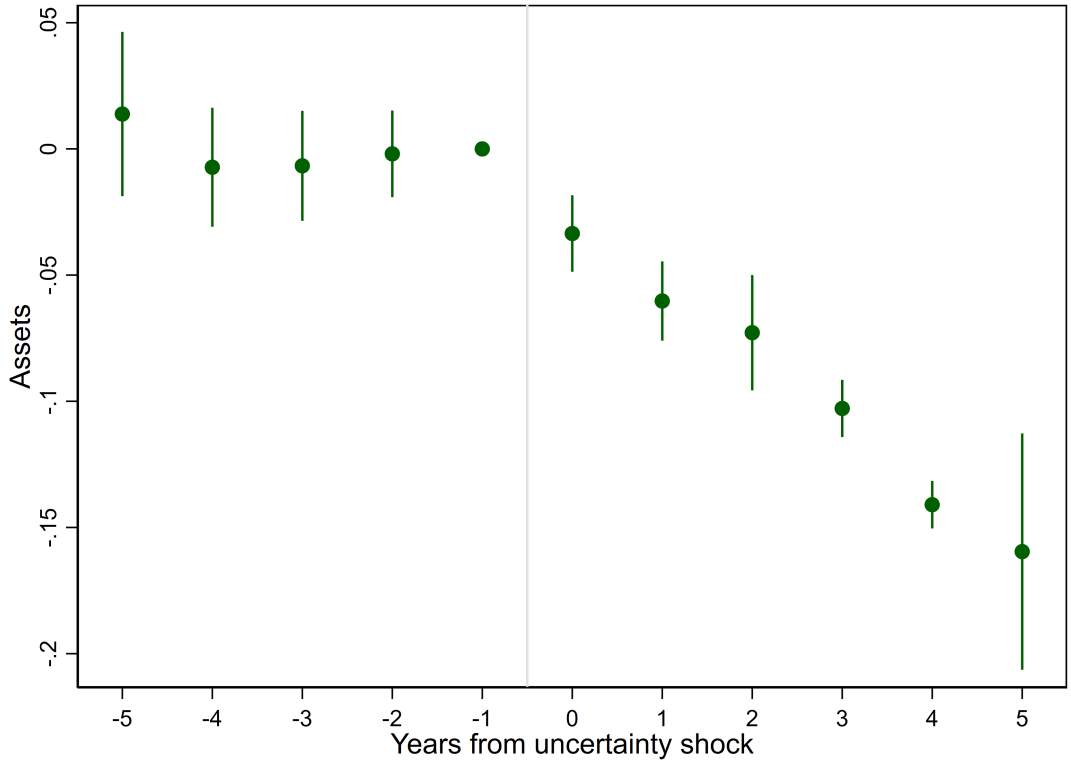
Figure 2: **Analysis around Uncertainty Shocks: Dynamic effects**

This figure plots the dynamic coefficients of the analysis of the effect of uncertainty shocks on firms with different levels of experience. The coefficients plotted are the interaction term between an indicator for a large shock and the experience of the firm, and represent the effect on revenues (Panel A), assets (Panel B), and number of employees (Panel C), respectively. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022.

Panel A: Revenues



Panel B: Assets



Panel C: Employees

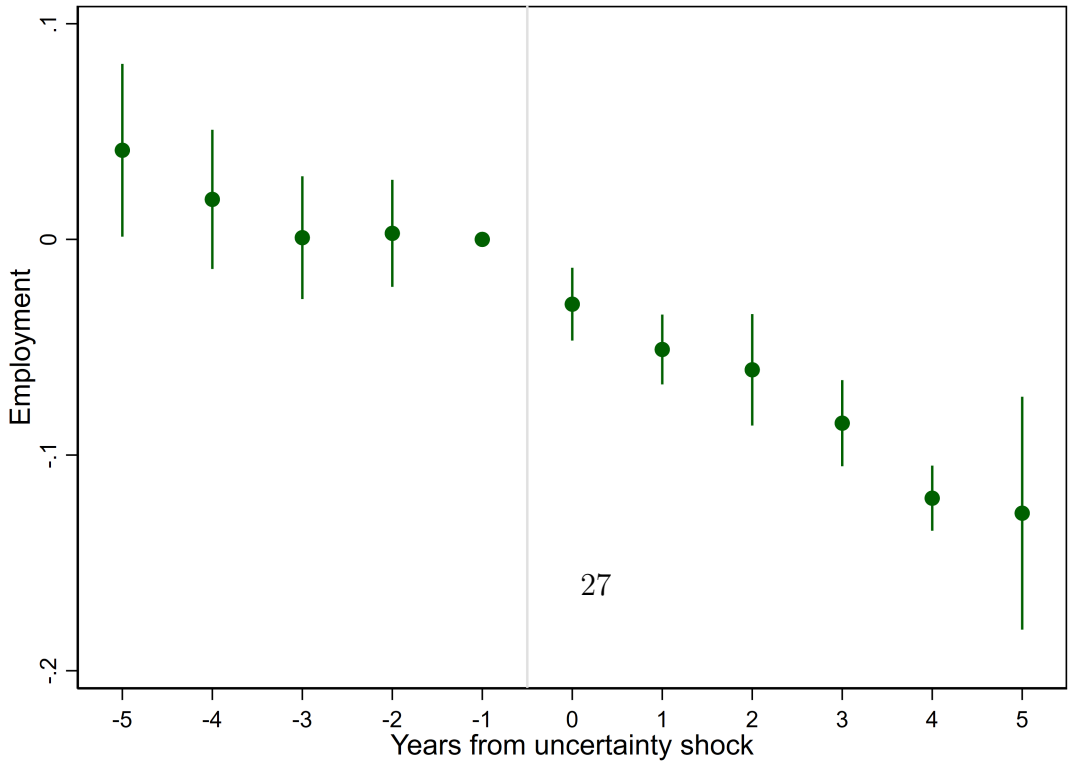
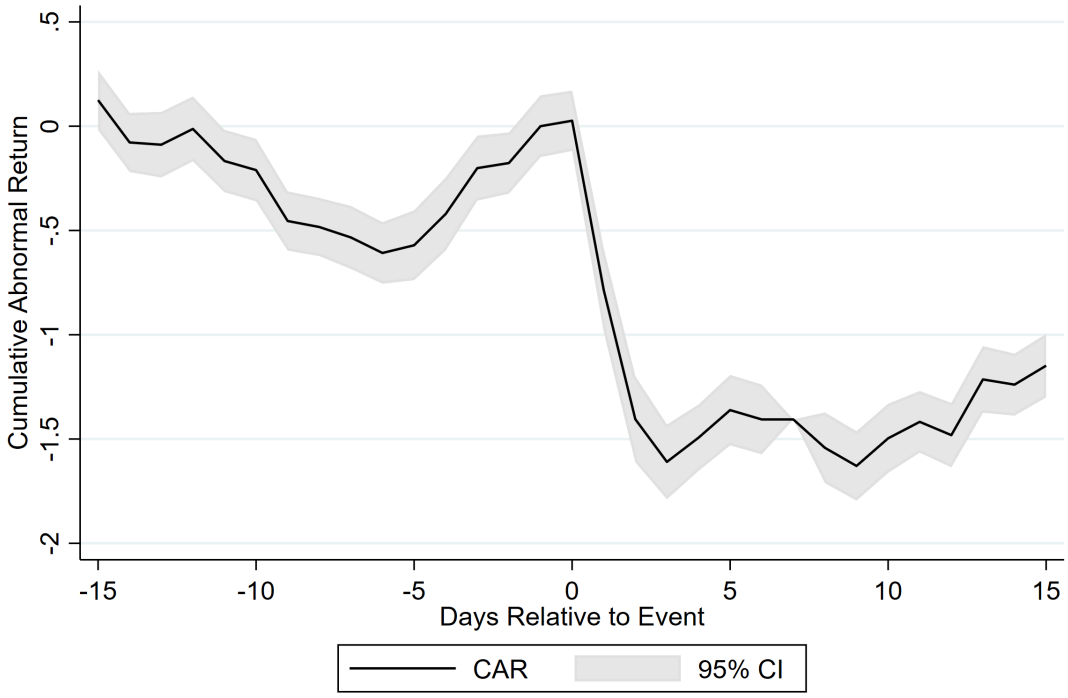


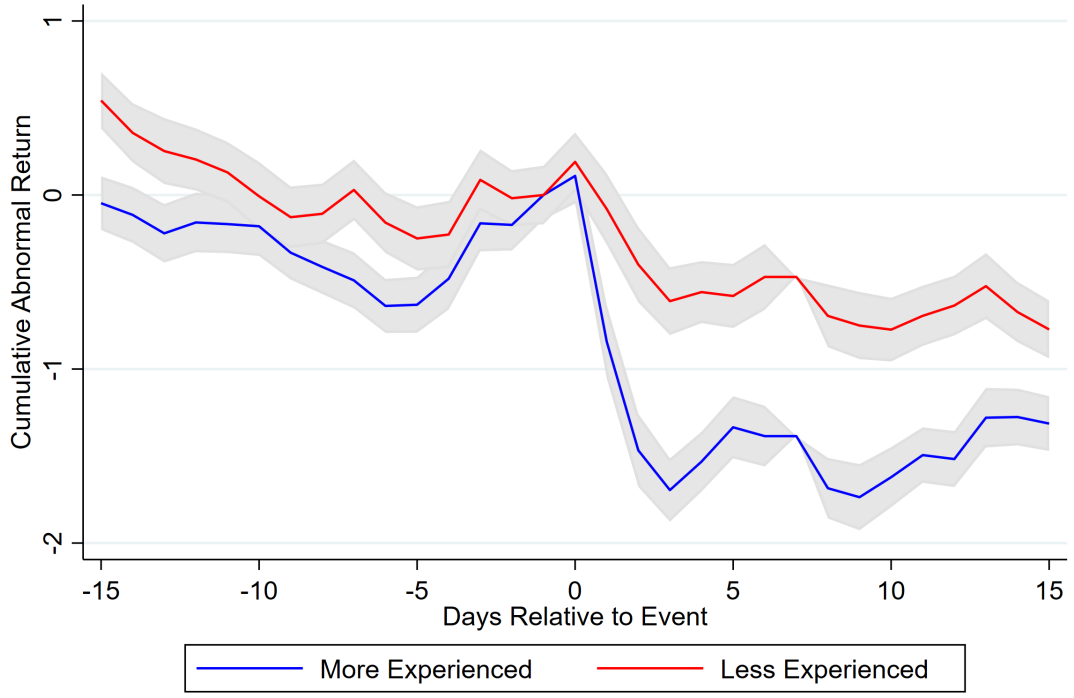
Figure 3: **Cumulative Abnormal Returns of UK-Exposed Firms around the Brexit Referendum**

This figure presents the results of an event study of daily cumulative abnormal returns for firms with UK subsidiary (Panel A), firms with more and less experienced UK subsidiaries (Panel B), and the difference (more minus less experienced; Panel C). The underlying regression follows equation 3 and the results presented in Table 8 but exposure to the UK is interacted with each day relative to the UK referendum on June 23, 2016 over a period from day -10 to day +10. Standard errors are clustered at firm level and the 95% confidence interval is shaded in gray. The y-axis denotes CARs multiplied by 100 (i.e., -1 is -1%, etc).

Panel A: Cumulative Abnormal Returns for Firms with UK Subsidiary



Panel B: Cumulative Abnormal Returns for Firms with more and less experienced UK Subsidiaries



Panel C: Cumulative Abnormal Returns (More experienced minus less experienced)

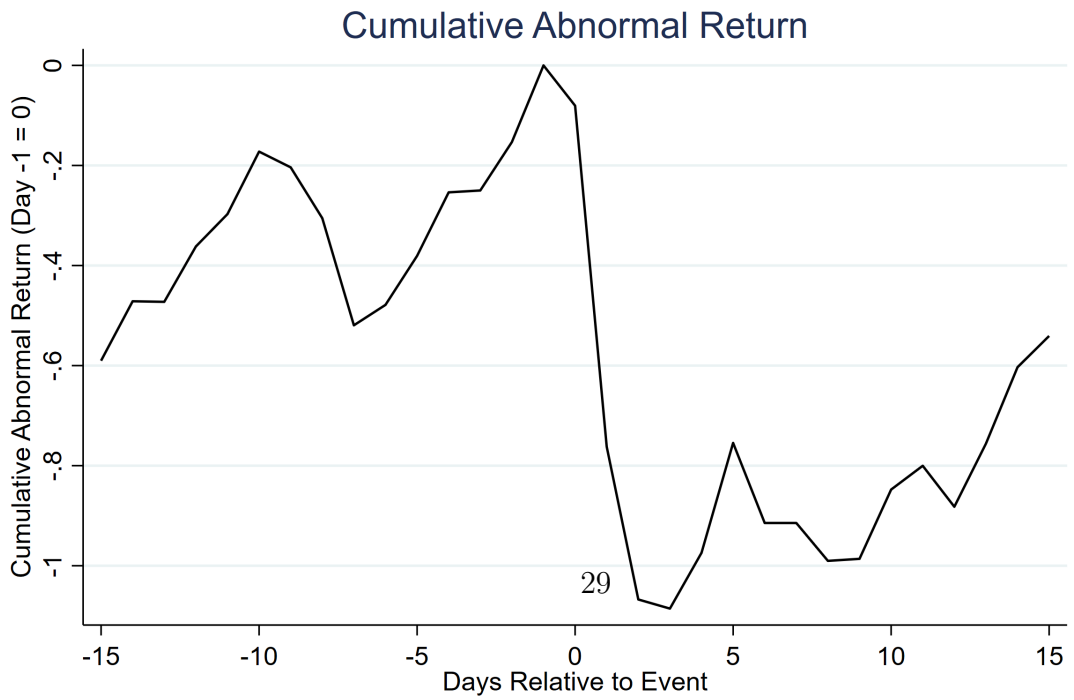


Table 1: **Descriptive Statistics**

This table reports descriptive statistics for sample firms. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. Panel A reports summary statistics, while Panel B reports correlations between the main firm-level variables.

Panel A: Summary Statistics

	N	Mean	SD	p10	p50	p90
Revenue (kUSD)	4,808,120	41,431.66	125,045.37	979.39	7,866.83	87,311.09
Assets (kUSD)	4,808,120	37,240.23	130,799.17	605.25	5,810.00	71,473.29
Employees	4,808,120	137.72	353.24	8.00	35.00	301.00
Firm Age	4,808,120	20.29	15.45	5.00	16.00	41.00
Uncertainty	4,808,120	0.24	0.17	0.07	0.21	0.42
GDP per capita (kUSD)	4,808,120	34.15	17.21	8.02	36.45	52.84

Panel B: Correlations

	Age	Assets	Revenue	Empl.	Profit over Assets	Profit Margin
Experience	1					
Assets	0.105	1				
Revenue	0.145	0.639	1			
Empl.	0.081	0.435	0.510	1		
Profit over Assets	-0.007	-0.030	0.002	-0.018	1	
Profit Margin	0.060	0.026	0.017	0.001	0.725	1

Table 2: **Experience and Uncertainty**

The table presents estimates from a panel regression on the relationship between uncertainty and firm revenue, assets, and employment count, for firms with different levels of experience. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. Sample firms are subsidiaries of business groups operating in countries covered by Orbis. The regression dependent variables as well as GDP pc, Experience and Initial size are expressed in logarithm. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Revenue	Assets	Employees	Revenue	Assets	Employees
Uncertainty × Experience	-0.241***	-0.215***	-0.226***	-0.172***	-0.108**	-0.180***
	(0.070)	(0.067)	(0.059)	(0.058)	(0.047)	(0.051)
Economic Development × Experience	-0.504***	-0.437***	-0.448***	-0.413***	-0.305***	-0.409***
	(0.082)	(0.086)	(0.081)	(0.065)	(0.060)	(0.070)
Uncertainty × Initial Size				-0.088***	-0.133***	-0.058***
				(0.019)	(0.030)	(0.012)
Economic Development × Initial Size				-0.087***	-0.135***	-0.030**
				(0.021)	(0.029)	(0.011)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry x Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country x Year FE	No	No	No	Yes	Yes	Yes
Observations	4,808,120	4,808,120	4,808,120	4,794,014	4,794,014	4,794,014
R^2	0.940	0.954	0.939	0.940	0.954	0.940

Table 3: **Experience and Uncertainty Shocks**

The table presents estimates from a panel regression on the relationship between large uncertainty shocks and firm revenue, assets, and employment count, for firms with different levels of experience. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. Sample firms are subsidiaries of business groups operating in countries covered by Orbis. The regression dependent variables as well as GDP pc, Experience and Initial size are expressed in logarithm. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Revenue	Assets	Employees	Revenue	Assets	Employees
Uncertainty Shock × Experience	-0.119***	-0.119***	-0.109***	-0.084***	-0.067***	-0.088***
	(0.025)	(0.022)	(0.027)	(0.017)	(0.014)	(0.023)
Economic Development × Experience	-0.485***	-0.404***	-0.410***	-0.396**	-0.278**	-0.374***
	(0.149)	(0.116)	(0.113)	(0.143)	(0.101)	(0.104)
Uncertainty Shock × Initial Size				-0.041***	-0.060***	-0.024***
				(0.009)	(0.011)	(0.006)
Economic Development x Initial Size				-0.083***	-0.128***	-0.025**
				(0.020)	(0.029)	(0.011)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry x Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country x Year FE	No	No	No	Yes	Yes	Yes
Observations	4,440,862	4,440,862	4,440,862	4,429,308	4,429,308	4,429,308
R^2	0.942	0.956	0.943	0.942	0.956	0.943

Table 4: **Experience and Uncertainty Shocks - Stacked Regressions**

The table presents estimates from a panel regression on the relationship between large uncertainty shocks and firm revenue, assets, and employment count, for firms with different levels of experience in a stacked regression setting. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. Sample firms are subsidiaries of business groups operating in countries covered by Orbis. The regression dependent variables as well as GDP pc, Experience and Initial size are expressed in logarithm. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Revenue	Assets	Employees	Revenue	Assets	Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty Shock × Experience	-0.119***	-0.119***	-0.109***	-0.084***	-0.067***	-0.088***
	(0.025)	(0.023)	(0.028)	(0.018)	(0.014)	(0.023)
Economic Development × Experience	-0.512***	-0.421***	-0.424***	-0.422**	-0.289**	-0.385***
	(0.160)	(0.124)	(0.122)	(0.154)	(0.111)	(0.113)
Uncertainty Shock × Initial size				-0.040***	-0.059***	-0.024***
				(0.009)	(0.012)	(0.006)
Economic Development × Initial size				-0.086***	-0.136***	-0.029**
				(0.022)	(0.033)	(0.013)
Firm x cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x cohort FE	No	No	No	No	No	No
Sub. Ctry x Indus. x Year x cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country x Year x cohort FE	No	No	No	Yes	Yes	Yes
Observations	45,351,930	45,351,930	45,351,930	45,266,562	45,266,562	45,266,562
R-squared	0.939	0.954	0.941	0.939	0.954	0.941

Table 5: **The Role of Industry Dynamics**

The table presents estimates from a panel regression on the relationship between uncertainty and firms' revenue, assets, and employment count for firms in different industries. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. Industry R&D is defined as the median R&D/sales ratio in a firms' NAICS 3 industry-year, estimated from Worldscope data. The regression dependent variables as well as GDP pc, Experience and Initial size are expressed in logarithm. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Revenue	Assets	Employees	Revenue	Assets	Employees
Uncertainty × Experience	-0.183**	-0.130**	-0.197***	-0.182**	-0.127**	-0.194***
	(0.064)	(0.045)	(0.051)	(0.063)	(0.046)	(0.050)
Uncertainty × Experience × Indus. R&D	1.293***	1.331***	1.311***	1.285***	1.323***	1.293***
	(0.326)	(0.338)	(0.297)	(0.331)	(0.338)	(0.301)
Economic Development × Experience	-0.439***	-0.319***	-0.440***	-0.418***	-0.305***	-0.417***
	(0.113)	(0.075)	(0.078)	(0.112)	(0.076)	(0.074)
Economic Development × Experience × Indus. R&D	0.762***	0.696**	1.035***	0.666**	0.647**	0.920***
	(0.254)	(0.265)	(0.205)	(0.239)	(0.257)	(0.190)
Uncertainty × Initial Size	-0.072***	-0.108***	-0.049***	-0.075***	-0.110***	-0.050***
	(0.017)	(0.025)	(0.014)	(0.018)	(0.025)	(0.013)
Economic Development × Initial Size	-0.074***	-0.123***	-0.018*	-0.082***	-0.128***	-0.027**
	(0.017)	(0.026)	(0.010)	(0.019)	(0.028)	(0.011)
Experience × Indus. R&D	-4.935***	-4.504***	-5.819***	-4.573***	-4.302***	-5.390***
	(0.979)	(0.996)	(0.817)	(0.932)	(0.968)	(0.768)
Initial Size × Indus. R&D	-0.607***	-0.896***	-0.317***	-0.614***	-0.907***	-0.318***
	(0.053)	(0.070)	(0.039)	(0.052)	(0.070)	(0.037)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry x Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country x Year FE	No	No	No	Yes	Yes	Yes
Observations	4,367,075	4,367,075	4,367,075	4,366,690	4,366,690	4,366,690
R^2	0.939	0.953	0.940	0.939	0.953	0.940

Table 6: **The Role of Industry Dynamics: Uncertainty Shocks**

The table presents estimates from a panel regression on the relationship between uncertainty and firms' revenue, assets, and employment count for firms in different industries. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. Industry R&D is defined as the median R&D/sales ratio in a firms' NAICS 3 industry, estimated from Worldscope data. The regression dependent variables as well as GDP pc, Experience and Initial size are expressed in logarithm. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Revenue	Assets	Employees	Revenue	Assets	Employees
Uncertainty Shock × Experience	-0.082***	-0.078***	-0.092***	-0.077***	-0.073***	-0.088***
	(0.018)	(0.015)	(0.026)	(0.015)	(0.013)	(0.023)
Uncertainty Shock × Experience × Indus. R&D	0.713**	0.838**	0.765**	0.707**	0.837**	0.758**
	(0.269)	(0.302)	(0.283)	(0.270)	(0.305)	(0.281)
Economic Development × Experience	-0.439***	-0.305***	-0.420***	-0.417***	-0.290***	-0.397***
	(0.132)	(0.089)	(0.094)	(0.133)	(0.089)	(0.091)
Economic Development × Experience × Indus. R&D	0.782**	0.598**	1.076***	0.695**	0.541*	0.973***
	(0.286)	(0.279)	(0.276)	(0.261)	(0.270)	(0.252)
Experience × Indus. R&D	-4.837***	-3.976***	-5.785***	-4.509***	-3.755***	-5.404***
	(1.105)	(1.047)	(1.064)	(1.022)	(1.010)	(0.981)
Uncertainty Shock × Initial size	-0.031***	-0.043***	-0.019***	-0.034***	-0.047***	-0.021***
	(0.007)	(0.008)	(0.006)	(0.009)	(0.007)	(0.005)
Economic Development × Initial size	-0.072***	-0.119***	-0.015	-0.081***	-0.124***	-0.024**
	(0.016)	(0.023)	(0.009)	(0.017)	(0.025)	(0.010)
Initial Size × Indus. R&D	-0.597***	-0.894***	-0.291***	-0.603***	-0.900***	-0.289***
	(0.048)	(0.072)	(0.035)	(0.047)	(0.070)	(0.031)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry x Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country x Year FE	No	No	No	Yes	Yes	Yes
Observations	4,036,869	4,036,869	4,036,869	4,036,495	4,036,495	4,036,495
R^2	0.941	0.955	0.943	0.941	0.955	0.943

Table 7: **The Role of Industry Dynamics: Uncertainty Shocks in Stacked Regressions**

The table presents estimates from a panel regression on the relationship between uncertainty and firms' revenue, assets, and employment count for firms in different industries in a stacked regression setting. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. Industry R&D is defined as the median R&D/sales ratio in a firms' NAICS 3 industry, estimated from Worldscope data. The regression dependent variables as well as GDP pc, Experience and Initial size are expressed in logarithm. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Revenue	Assets	Employees	Revenue	Assets	Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty Shock × Experience	-0.082***	-0.079***	-0.092***	-0.078***	-0.074***	-0.089***
	(0.018)	(0.016)	(0.026)	(0.015)	(0.014)	(0.023)
Uncertainty Shock × Experience × Indus. R&D	0.738**	0.868**	0.787**	0.731**	0.866**	0.778**
	(0.274)	(0.320)	(0.285)	(0.276)	(0.325)	(0.281)
Economic Development × Experience	-0.464***	-0.314***	-0.431***	-0.443***	-0.302***	-0.408***
	(0.141)	(0.097)	(0.100)	(0.141)	(0.097)	(0.097)
Economic Development × Experience × Indus. R&D	0.744**	0.614*	1.023***	0.669**	0.575*	0.928***
	(0.308)	(0.302)	(0.319)	(0.279)	(0.293)	(0.296)
Experience × Indus. R&D	-4.719***	-4.049***	-5.629***	-4.436***	-3.891***	-5.278***
	(1.201)	(1.141)	(1.227)	(1.106)	(1.103)	(1.146)
Initial Size × Indus. R&D	-0.629***	-0.946***	-0.299***	-0.636***	-0.953***	-0.300***
	(0.043)	(0.061)	(0.036)	(0.042)	(0.059)	(0.032)
Uncertainty Shock × Initial size	-0.030***	-0.042***	-0.018***	-0.034***	-0.046***	-0.021***
	(0.007)	(0.008)	(0.006)	(0.009)	(0.007)	(0.005)
Economic Development pc × Initial size	-0.075***	-0.128***	-0.018*	-0.083***	-0.131***	-0.027**
	(0.017)	(0.026)	(0.010)	(0.019)	(0.028)	(0.011)
Firm x cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry × Industry × Year x cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country × Year x cohort FE	-	-	-	Yes	Yes	Yes
Observations	41,425,605	41,425,605	41,425,605	41,421,301	41,421,301	41,421,301
R-squared	0.938	0.954	0.942	0.938	0.954	0.942

Table 8: **Brexit Referendum: Parent Stock Returns by UK Subsidiary Age**

This table presents results of an event study of daily raw returns (columns 1 to 3 in Panel A) and abnormal returns (all other columns and panels). The sample is comprised of all public firms in Datastream/Worldscope, the unit of observation is daily returns, and the sample period is 2016. The controls of interest Ref × Old UK Subs and Ref × Young UK Subs are indicator variables set equal to one on days within various event windows around the UK Brexit Referendum on June 23, 2016 interacted with an indicator variable set equal to one if a public firm's oldest UK subsidiary was of above-median age (Old UK Subsidiary) or below-median age (Young UK Subsidiary) in 2015. The median is constructed using the incorporation year of all UK subsidiaries owned by a foreign public firm in 2015. The event window is defined as trading days [0;1] in Panel A and alternative event windows are defined as indicated in Panel B. One-factor abnormal returns are constructed from seemingly unrelated rolling regressions estimated for each public firm using days [-230;-30] as estimation window and using market and risk free rates from French's data library. Stale returns (prices that do not move at firm-month level) are dropped, and a minimum of 100 days are required during the estimation window. Economic effects (in $million) are calculated as the product of number of days in an event window, the mean (median) market value of firms with old and young UK subsidiary in May 2016 (i.e., prior to the referendum), and the coefficients of interest. Standard errors are presented in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Event window [0;1]

	Raw Returns			Abnormal Returns		
	(1)	(2)	(3)	(4)	(5)	(6)
Ref × Older UK Subs	-0.666***	-0.548***	-0.546***	-0.391***	-0.406***	-0.376***
	(0.052)	(0.062)	(0.076)	(0.052)	(0.059)	(0.072)
Ref × Younger UK Subs	-0.305***	-0.175***	-0.148**	-0.064	-0.051	-0.010
	(0.060)	(0.060)	(0.072)	(0.060)	(0.058)	(0.070)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Day FE	Yes	Abs.	Abs.	Yes	Abs.	Abs.
Day × Home Country FE	-	Yes	Abs.	-	Yes	Abs.
Day × Sector FE	-	Yes	Abs.	-	Yes	Abs.
Day × Home Country × Sector FE	-	-	Yes	-	-	Yes
Observations	1,634,467	1,627,768	1,439,146	1,603,239	1,596,653	1,411,240
Older vs. Younger (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Mean Economic Effect Older $mn	-198.6	-163.3	-162.5	-116.5	-121.0	-112.2
Median Economic Effect Older $mn	-55.7	-45.8	-45.6	-32.7	-33.9	-31.5
Mean Economic Effect Younger $mn	-41.5	-23.7	-20.0	-8.6	-6.9	-1.4
Median Economic Effect Younger $mn	-9.8	-5.6	-4.8	-2.0	-1.6	-0.3

Panel B: Abnormal returns over longer event windows

	[0;1] (1)	[0;3] (2)	[0;5] (3)	[0;10] (4)	[0;20] (5)	[0;30] (6)
Ref × Older UK Subsidiary	-0.376***	-0.359***	-0.172***	-0.136***	-0.050***	-0.053***
	(0.072)	(0.051)	(0.039)	(0.031)	(0.019)	(0.017)
Ref × Younger UK Subsidiary	-0.010	-0.119**	-0.070*	-0.044	-0.008	-0.004
	(0.070)	(0.049)	(0.038)	(0.031)	(0.019)	(0.017)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Day FE	Yes	Abs.	Abs.	Yes	Abs.	Abs.
Day × Home Country FE	-	Yes	Abs.	-	Yes	Abs.
Day × Sector FE	-	Yes	Abs.	-	Yes	Abs.
Day × Home Country × Sector FE	-	-	Yes	-	-	Yes
Observations	1,411,240	1,411,240	1,411,240	1,411,240	1,411,240	1,411,240
Older vs. Younger (p-value)	0.000	0.000	0.015	0.007	0.036	0.007
Mean Economic Effect Older $mn	-112.2	-212.3	-152.2	-221.7	-155.3	-243.3
Median Economic Effect Older $mn	-31.5	-59.6	-42.9	-62.0	-43.6	-68.4
Mean Economic Effect Younger $mn	-1.4	-32.2	-28.3	-33.1	-11.6	-8.6
Median Economic Effect Younger $mn	-0.3	-7.7	-6.8	-7.8	-2.8	-2.0

ONLINE APPENDIX

for

"A Dark Side to Experience? Firm Age and Uncertainty"

Jim Goldman, Pablo Slutzky, and Stefan Zeume

A Appendix Figures

Figure A.1: Worldwide Uncertainty Index – Country-by-Country

This figure plots the Uncertainty Index for the subset of countries in the sample with more than six thousand firms. Data are from the World Uncertainty Index (WUI) developed by Ahir et al. (2022)

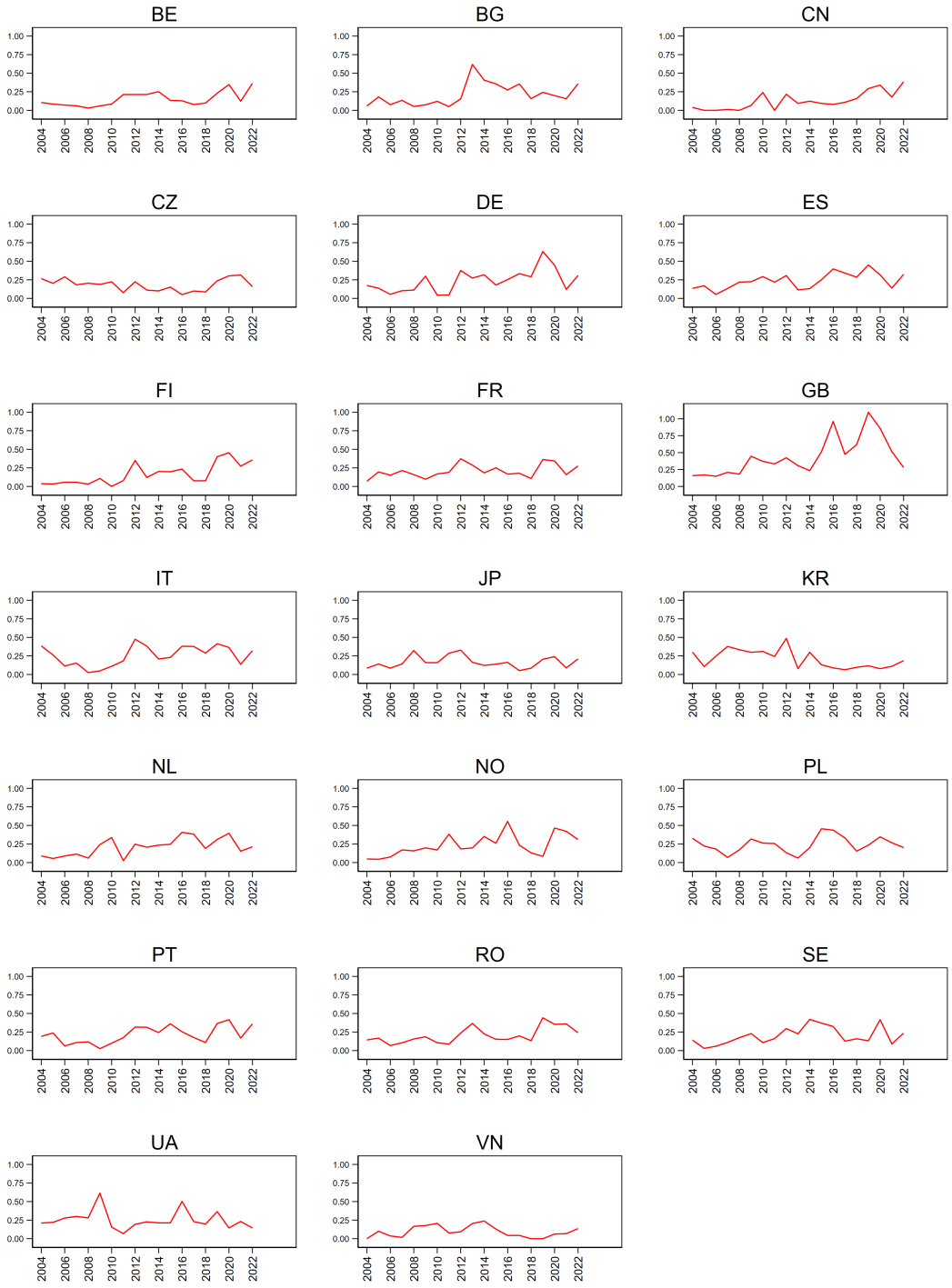


Figure A.2: Number of Firms by Country

This figure shows the number of firms in our sample for the subset of countries with more than six thousand firms. Data are from Orbis and span the 2004 to 2022 period

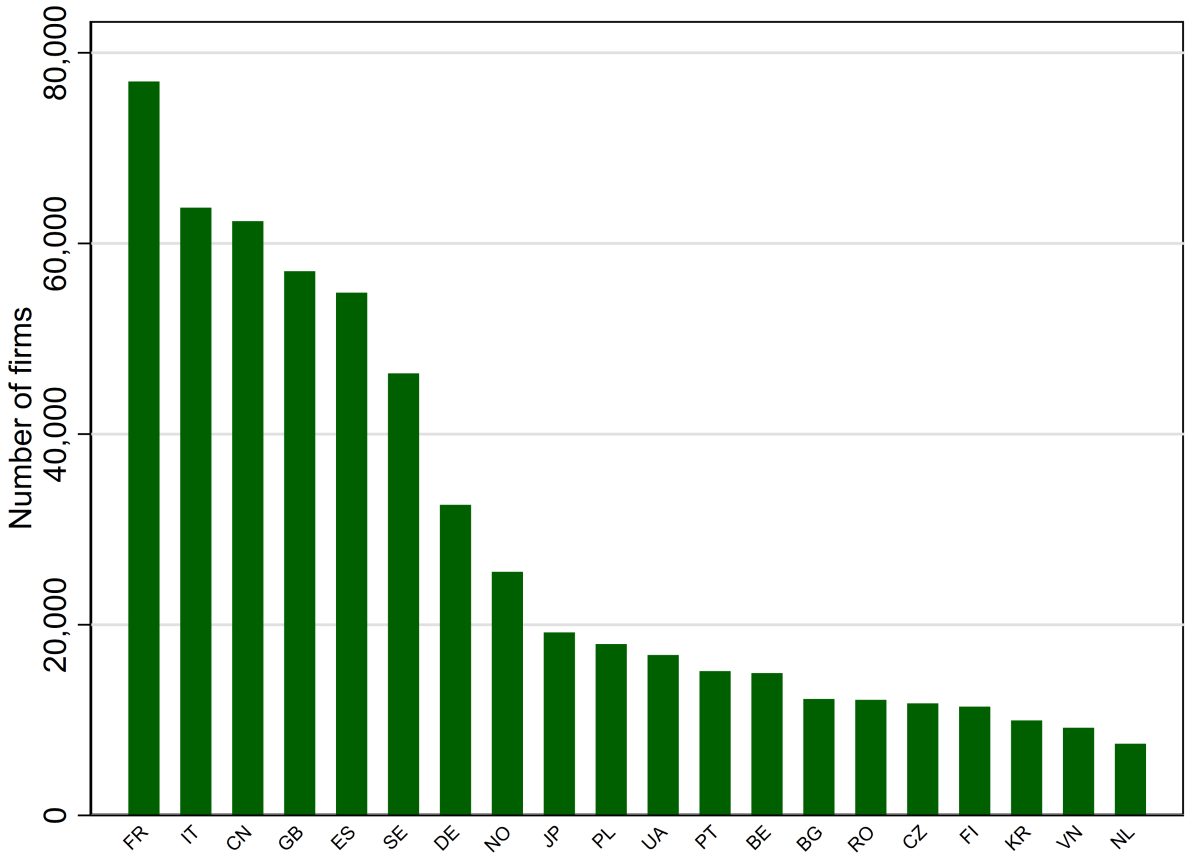


Figure A.3: Incorporation Year Distribution by Country

This figure plots summary statistics for the year of incorporation of the firms in our sample. The vertical solid lines forming the box represent the 25th, 50th, and 75th percentiles of incorporation year. The upper (lower) whisker is equal to the 75th (25th) percentile plus (minus) 1.5 times the interquartile range, bounded at the min/max. Data are from Bureau van Dijk's Orbis database. We restrict the list of countries shown individually to those with at least 1,000 firms. Other countries are pooled and shown as "Others".

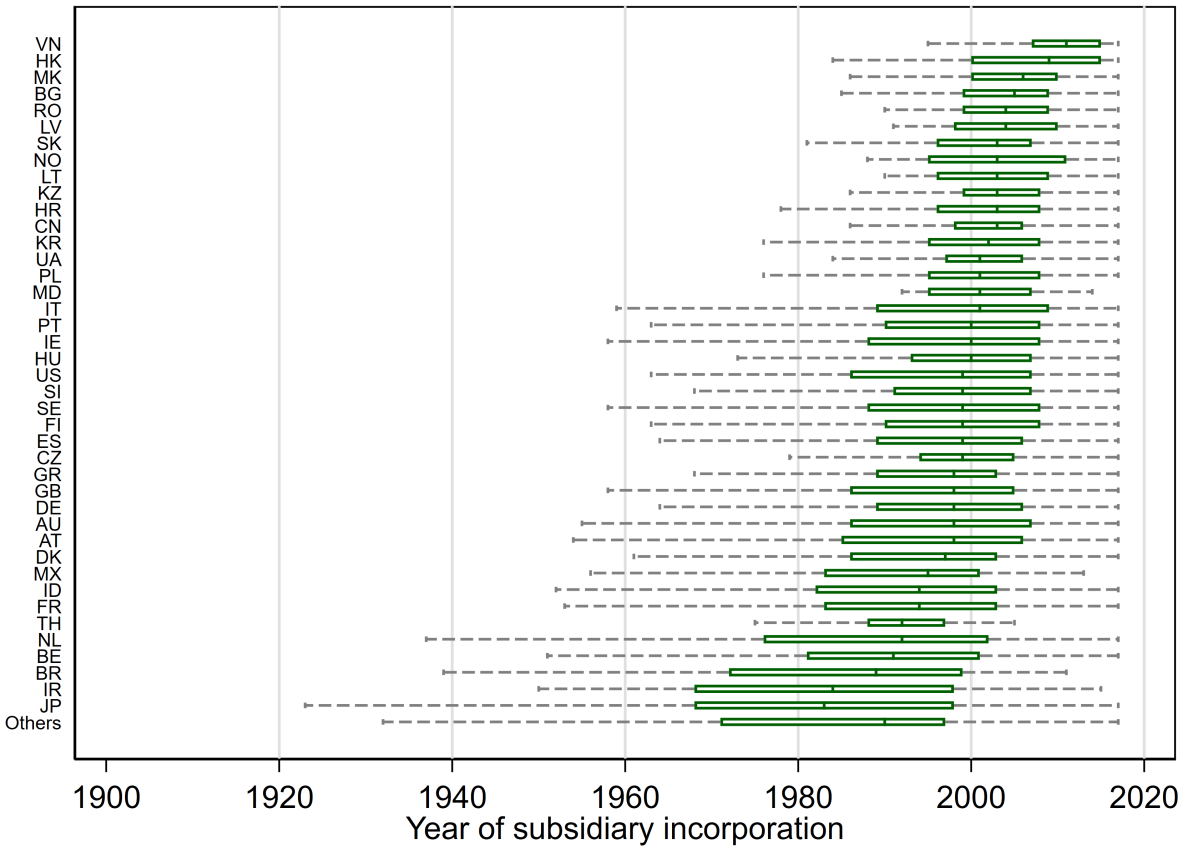


Figure A.4: Experience and Uncertainty – Robustness to Excluding one Country at a Time

This figure assesses the robustness of the uncertainty x experience coefficient in the baseline analysis (Table 2) to the exclusion of each country with more than 10,000 observations in the sample. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. Each regression's dependent variable is the logarithm of revenue. The independent variables are uncertainty x Experience, uncertainty x Initial size, GDP pc x Experience, GDP pc x Initial size, where Experience, initial size, and GDP are expressed in logarithm. The regressions include firm, and Country x Industry x Year fixed effects. Each dot on the figure represents the coefficient on uncertainty x Experience when the regression is estimated when excluding the country indicated on the Y-axis. Horizontal lines represent the 95% confidence interval based on standard errors double clustered by country and year.

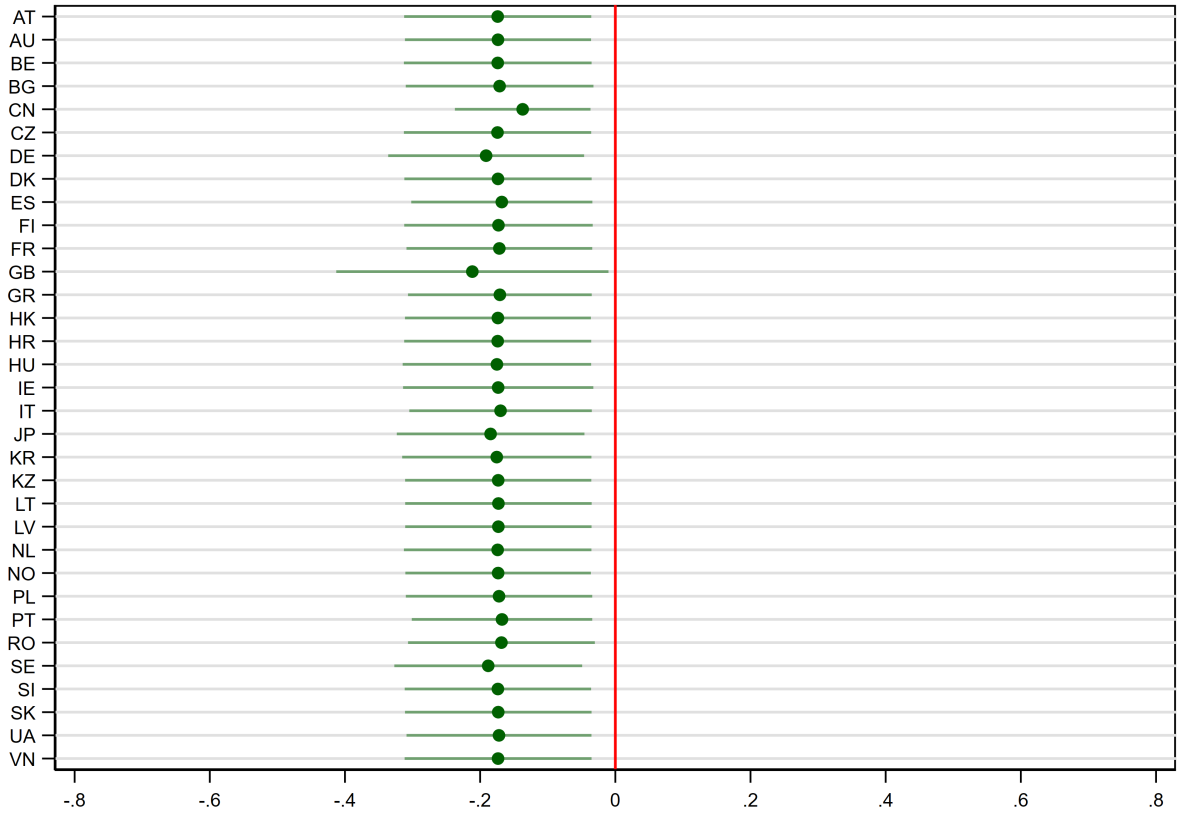
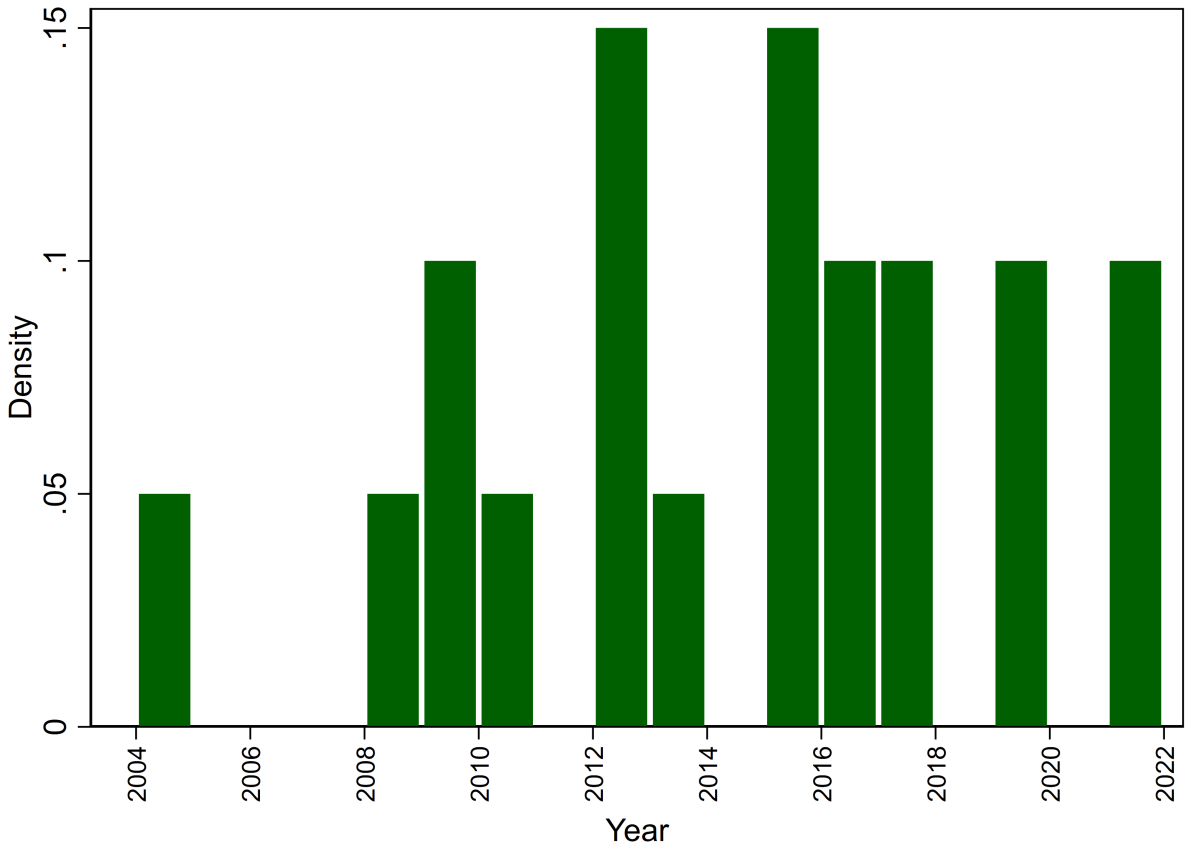


Figure A.5: Distribution of Large Uncertainty Shocks

This figure plots the distribution of large uncertainty shocks across time. Extreme shocks are defined as changes in uncertainty level greater than 3-standard deviations, which affects 5% of country-years and 13% of observations. Data are from the World Uncertainty Index (WUI) developed by Ahir et al. (2022)



B Appendix Tables

Table A-1: Firm Age and Uncertainty: Robustness to Dynamic Measures of Age

The table presents estimates from a panel regression on the relationship between between uncertainty and firms' revenue, assets, and employment count. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. The regression dependent variables as well as Economic Development and Initial size are expressed in logarithms. Experience is calculated as the natural logarithm of the age of the firm in the corresponding year. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Revenue	Assets	Employees	Revenue	Assets	Employees
Uncertainty × Experience	-0.040***	-0.041***	-0.036***	-0.027***	-0.026***	-0.023***
	(0.010)	(0.012)	(0.007)	(0.009)	(0.009)	(0.006)
Economic Development × Experience	-0.070***	-0.045***	-0.054***	-0.064***	-0.041***	-0.051***
	(0.008)	(0.005)	(0.006)	(0.010)	(0.007)	(0.006)
Experience	1.936***	2.848***	1.133***	1.890***	2.816***	1.147***
	(0.034)	(0.027)	(0.026)	(0.067)	(0.051)	(0.036)
Experience × Initial size	-0.093***	-0.160***	-0.046***	-0.091***	-0.159***	-0.048***
	(0.002)	(0.002)	(0.001)	(0.003)	(0.003)	(0.002)
Uncertainty × Initial size				-0.029***	-0.030***	-0.028***
				(0.008)	(0.010)	(0.007)
Economic Development × Initial size				-0.014	-0.009	0.008
				(0.013)	(0.012)	(0.006)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry x Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country x Year FE	No	No	No	Yes	Yes	Yes
Observations	4,817,059	4,817,059	4,817,059	4,816,672	4,816,672	4,816,672
R^2	0.941	0.955	0.940	0.941	0.956	0.941

Table A-2: Firm Age and Uncertainty: Robustness to Discrete Measures of Age

The table presents estimates from a panel regression on the relationship between between uncertainty and firms' revenue, assets, and employment count. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. The regression dependent variables as well as Economic Development and Initial size are expressed in logarithms. The interaction terms with the first quintile of Experience are the reference groups and are omitted from the regressions. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Revenue	Assets	Employees	Revenue	Assets	Employees
Uncertainty × Experience q2	0.012	0.016	0.028	0.025	0.035	0.039
	(0.049)	(0.047)	(0.036)	(0.049)	(0.046)	(0.036)
Uncertainty × Experience q3	-0.118*	-0.082	-0.077*	-0.088	-0.038	-0.057
	(0.058)	(0.054)	(0.043)	(0.056)	(0.050)	(0.041)
Uncertainty × Experience q4	-0.203***	-0.169**	-0.158***	-0.152**	-0.096	-0.122**
	(0.068)	(0.068)	(0.052)	(0.062)	(0.057)	(0.048)
Uncertainty × Experience q5	-0.290***	-0.265***	-0.266***	-0.208**	-0.140**	-0.210***
	(0.086)	(0.086)	(0.070)	(0.073)	(0.063)	(0.061)
Economic Development × Experience q2	-0.198***	-0.173***	-0.152***	-0.190***	-0.157***	-0.149***
	(0.043)	(0.047)	(0.038)	(0.041)	(0.043)	(0.037)
Economic Development × Experience q3	-0.370***	-0.327***	-0.267***	-0.344***	-0.277***	-0.261***
	(0.045)	(0.053)	(0.045)	(0.042)	(0.044)	(0.043)
Economic Development × Experience q4	-0.472***	-0.392***	-0.391***	-0.414***	-0.314***	-0.360***
	(0.060)	(0.070)	(0.057)	(0.052)	(0.053)	(0.051)
Economic Development × Experience q5	-0.521***	-0.457***	-0.482***	-0.424***	-0.320***	-0.436***
	(0.107)	(0.115)	(0.103)	(0.089)	(0.086)	(0.092)
Uncertainty × Initial Size				-0.088***	-0.132***	-0.058***
				(0.020)	(0.030)	(0.012)
Economic Development × Initial size				-0.089***	-0.136***	-0.032**
				(0.021)	(0.028)	(0.011)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry x Industry x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country x Year FE	No	No	No	Yes	Yes	Yes
Observations	4,808,120	4,808,120	4,808,120	4,794,014	4,794,014	4,794,014
R^2	0.940	0.954	0.939	0.940	0.954	0.940

Table A-3: Firm Age and Uncertainty: Robustness to Sample Period and Geography

The table presents estimates from a panel regression on the relationship between between uncertainty and firms' revenue, assets, and employment count. In columns (1) to (4), we restrict the sample to years 2004-2019, excluding the impact of the COVID-19 pandemic. In columns (5) to (8) we restrict the sample to OECD countries. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. The regression dependent variables as well as Economic Development, Experience and Initial size are expressed in logarithm. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	2004 – 2019 Sample			OECD Sample		
	Revenue	Assets	Employees	Revenue	Assets	Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty × Experience	-0.175***	-0.104**	-0.205***	-0.121**	-0.075*	-0.152***
	(0.050)	(0.042)	(0.053)	(0.048)	(0.040)	(0.048)
Economic Development × Experience	-0.292**	-0.193**	-0.311***	-0.246**	-0.183*	-0.310**
	(0.098)	(0.080)	(0.100)	(0.111)	(0.089)	(0.114)
Uncertainty × Initial size	-0.096***	-0.144***	-0.062***	-0.102***	-0.151***	-0.067***
	(0.018)	(0.025)	(0.011)	(0.024)	(0.036)	(0.015)
Economic Development × Initial size	-0.090***	-0.122***	-0.030**	-0.108***	-0.187***	-0.046*
	(0.021)	(0.031)	(0.010)	(0.037)	(0.060)	(0.022)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry × Indus. × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,779,683	3,779,683	3,779,683	4,068,023	4,068,023	4,068,023
R^2	0.945	0.958	0.945	0.942	0.954	0.939

Table A-4: Firm Age and Uncertainty: Robustness to Controlling for Age

The table presents estimates from a panel regression on the relationship between between uncertainty and firms' revenue, assets, and employment count. In addition to the previous controls, we include size x industry x year fixed effects. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. The regression dependent variables as well as Economic Development, Experience and Initial size are expressed in logarithm. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Revenue	Assets	Employees	Revenue	Assets	Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty × Experience	-0.185***	-0.131***	-0.194***	-0.179***	-0.121**	-0.187***
	(0.059)	(0.040)	(0.049)	(0.062)	(0.042)	(0.050)
Economic Development × Experience	-0.437***	-0.327***	-0.415***	-0.428***	-0.308***	-0.424***
	(0.108)	(0.069)	(0.083)	(0.109)	(0.069)	(0.083)
Uncertainty × Initial size				-0.013	-0.023**	-0.012
				(0.009)	(0.009)	(0.009)
Economic Development × Initial size				-0.021**	-0.043***	0.023***
				(0.010)	(0.011)	(0.007)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry x Indus. × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Size quint. x Indus. × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,793,924	4,793,924	4,793,924	4,793,924	4,793,924	4,793,924
R-squared	0.940	0.955	0.940	0.940	0.955	0.940

Table A-5: Firm Age and Uncertainty: Robustness to Additional Controls

This table presents estimates from a panel regression examining the relationship between uncertainty and firms' revenues (Panel A), assets (Panel B), and employment count (Panel C), following the analysis in Table 2, but including a series of additional control variables. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. The regression dependent variables as well as Economic Development, Experience and Initial size are expressed in logarithm. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Revenues

	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty × Experience	-0.172**	-0.175**	-0.175**	-0.175**	-0.174**	-0.176**
	(0.064)	(0.065)	(0.064)	(0.064)	(0.065)	(0.063)
Uncertainty × Leverage	0.187***					0.197***
	(0.047)					(0.051)
Uncertainty × Level of Subsidiary		-0.044				-0.084**
		(0.040)				(0.034)
Uncertainty × #Subsidiaries in Group			0.000			0.003
			(0.011)			(0.011)
Uncertainty × Mean Group Depth				-0.025		0.003
				(0.041)		(0.025)
Uncertainty × Public Firm in Group					0.034	0.054**
					(0.024)	(0.019)
Economic Development × Experience	-0.401***	-0.408***	-0.410***	-0.409***	-0.412***	-0.401***
	(0.116)	(0.118)	(0.119)	(0.118)	(0.118)	(0.115)
Economic Development × Leverage	0.252**					0.273**
	(0.103)					(0.101)
Economic Development × Level of Subsidiary		0.052				-0.064
		(0.038)				(0.069)
Economic Development × #Subsidiaries in Group			0.023***			0.015
			(0.004)			(0.010)
Economic Development × Mean Group Depth				0.056**		-0.002
				(0.023)		(0.046)
Economic Development × Public Firm in Group					0.118***	0.095**
					(0.031)	(0.042)
Uncertainty × Initial Size	-0.092***	-0.091***	-0.091***	-0.090***	-0.093***	-0.098***
	(0.022)	(0.020)	(0.019)	(0.019)	(0.020)	(0.022)
Economic Development × Initial Size	-0.090***	-0.093***	-0.097***	-0.093***	-0.098***	-0.103***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.024)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry × Indus. × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,610,972	4,501,916	4,501,916	4,501,916	4,501,916	4,331,571
R^2	0.940	0.940	0.940	0.940	0.940	0.939

Panel B: Assets

	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty × Experience	-0.120**	-0.110**	-0.109**	-0.109**	-0.109**	-0.123**
	(0.049)	(0.047)	(0.047)	(0.047)	(0.047)	(0.048)
Uncertainty × Leverage	-0.102***					-0.097**
	(0.033)					(0.036)
Uncertainty × Level of Subsidiary		-0.028				-0.117**
		(0.025)				(0.042)
Uncertainty × #Subsidiaries in Group			0.003			-0.005
			(0.008)			(0.011)
Uncertainty × Mean Group Depth				-0.001		0.066*
				(0.031)		(0.034)
Uncertainty × Public Firm in Group					0.063***	0.087***
					(0.015)	(0.024)
Economic Development × Experience	-0.309***	-0.304***	-0.305***	-0.304***	-0.306***	-0.313***
	(0.087)	(0.084)	(0.085)	(0.084)	(0.084)	(0.085)
Economic Development × Leverage	-0.115					-0.100
	(0.069)					(0.066)
Economic Development × Level of Subsidiary		0.031				-0.140***
		(0.028)				(0.036)
Economic Development × #Subsidiaries in Group			0.016**			-0.001
			(0.006)			(0.010)
Economic Development × Mean Group Depth				0.055***		0.095**
				(0.018)		(0.041)
Economic Development × Public Firm in Group					0.111***	0.112***
					(0.014)	(0.015)
Uncertainty × Initial Size	-0.136***	-0.137***	-0.138***	-0.137***	-0.141***	-0.144***
	(0.032)	(0.030)	(0.030)	(0.030)	(0.030)	(0.032)
Economic Development × Initial Size	-0.134***	-0.141***	-0.144***	-0.142***	-0.146***	-0.147***
	(0.034)	(0.036)	(0.036)	(0.036)	(0.036)	(0.036)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry × Indus. × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,610,972	4,501,916	4,501,916	4,501,916	4,501,916	4,331,571
R^2	0.954	0.953	0.953	0.953	0.953	0.953

Panel C: Employment

	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty × Experience	-0.184***	-0.184***	-0.184***	-0.185***	-0.183***	-0.188***
	(0.052)	(0.051)	(0.051)	(0.051)	(0.051)	(0.052)
Uncertainty × Leverage	0.038*					0.039
	(0.019)					(0.024)
Uncertainty × Level of Subsidiary		-0.061**				-0.051*
		(0.025)				(0.028)
Uncertainty × #Subsidiaries in Group			-0.011			-0.005
			(0.008)			(0.009)
Uncertainty × Mean Group Depth				-0.049*		0.000
				(0.027)		(0.019)
Uncertainty × Public Firm in Group					-0.020	0.008
					(0.017)	(0.012)
Economic Development × Experience	-0.403***	-0.412***	-0.412***	-0.412***	-0.413***	-0.409***
	(0.086)	(0.091)	(0.091)	(0.091)	(0.091)	(0.091)
Economic Development × Leverage	0.080*					0.095**
	(0.043)					(0.042)
Economic Development × Level of Subsidiary		-0.000				-0.069**
		(0.025)				(0.029)
Economic Development × #Subsidiaries in Group			0.011**			0.013
			(0.004)			(0.009)
Economic Development × Mean Group Depth				0.011		-0.008
				(0.017)		(0.026)
Economic Development × Public Firm in Group					0.052*	0.034
					(0.029)	(0.038)
Uncertainty × Initial Size	-0.062***	-0.059***	-0.058***	-0.058***	-0.059***	-0.063***
	(0.016)	(0.014)	(0.013)	(0.014)	(0.014)	(0.015)
Economic Development × Initial Size	-0.032**	-0.034**	-0.036**	-0.034**	-0.036**	-0.040***
	(0.013)	(0.014)	(0.013)	(0.013)	(0.013)	(0.014)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry × Indus. × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,610,972	4,501,916	4,501,916	4,501,916	4,501,916	4,331,571
R^2	0.939	0.938	0.938	0.938	0.938	0.938

Table A-6: Firm Age and Uncertainty Shocks: Robustness to Additional Controls

The table presents estimates from a panel regression examining the relationship between large uncertainty shocks and firms' revenues (Panel A), assets (Panel B), and employment count (Panel C), following the analysis in Table 3, but including a series of additional control variables. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. The regression dependent variables as well as Economic Development, Experience and Initial size are expressed in logarithm. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Revenues

	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty Shock x Experience	-0.087***	-0.086***	-0.085***	-0.085***	-0.085***	-0.089***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Uncertainty Shock x Leverage ratio	0.029					0.029
	(0.024)					(0.023)
Uncertainty Shock x Level of Subsidiary		-0.038**				-0.035
		(0.017)				(0.023)
Uncertainty Shock x # Subsidiaries in Group			-0.006			-0.001
			(0.005)			(0.005)
Uncertainty Shock x Mean Group Depth				-0.029		-0.003
				(0.022)		(0.027)
Uncertainty Shock x Public Firm in Group					-0.013*	0.001
					(0.007)	(0.011)
Ec. Development x Experience	-0.383**	-0.387**	-0.388**	-0.388**	-0.389**	-0.376**
	(0.140)	(0.143)	(0.145)	(0.144)	(0.143)	(0.141)
Ec. Development x Leverage ratio	0.286**					0.303**
	(0.126)					(0.127)
Ec. Development x Level of Subsidiary		0.064*				-0.053
		(0.036)				(0.067)
Ec. Development x Subsidiaries in Group			0.024***			0.013
			(0.004)			(0.011)
Ec. Development x Mean Group Depth				0.063***		-0.006
				(0.019)		(0.044)
Ec. Development x Public Firm in Group					0.129***	0.106**
					(0.032)	(0.045)
Uncertainty Shock x Initial Size	-0.042***	-0.040***	-0.039***	-0.039***	-0.040***	-0.041***
	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)
Ec. Development x Initial Size	-0.086***	-0.088***	-0.093***	-0.089***	-0.095***	-0.099***
	(0.020)	(0.021)	(0.022)	(0.021)	(0.022)	(0.023)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry x Indus. x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,267,858	4,148,445	4,148,445	4,148,445	4,148,445	3,998,000
R-squared	0.942	0.942	0.942	0.942	0.942	0.942

Panel B: Assets

	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty Shock x Experience	-0.075***	-0.067***	-0.067***	-0.067***	-0.067***	-0.076***
	(0.016)	(0.014)	(0.014)	(0.014)	(0.014)	(0.016)
Uncertainty Shock x Leverage ratio	-0.070***					-0.072***
	(0.006)					(0.007)
Uncertainty Shock x Level of Subsidiary		-0.024***				-0.002
		(0.008)				(0.028)
Uncertainty Shock x # Subsidiaries in Group			-0.008**			-0.017*
			(0.004)			(0.008)
Uncertainty Shock x Mean Group Depth				-0.026*		0.003
				(0.013)		(0.030)
Uncertainty Shock x Public Firm in Group					0.020***	0.056***
					(0.004)	(0.012)
Ec. Development x Experience	-0.279**	-0.274**	-0.275**	-0.275**	-0.276**	-0.280**
	(0.103)	(0.100)	(0.101)	(0.101)	(0.100)	(0.102)
Ec. Development x Leverage ratio	-0.065					-0.049
	(0.070)					(0.068)
Ec. Development x Level of Subsidiary		0.040				-0.136***
		(0.027)				(0.028)
Ec. Development x Subsidiaries in Group			0.017***			-0.001
			(0.006)			(0.010)
Ec. Development x Mean Group Depth				0.062***		0.097**
				(0.018)		(0.038)
Ec. Development x Public Firm in Group					0.117***	0.118***
					(0.015)	(0.017)
Uncertainty Shock x Initial Size	-0.060***	-0.061***	-0.059***	-0.060***	-0.062***	-0.060***
	(0.012)	(0.011)	(0.011)	(0.011)	(0.012)	(0.012)
Ec. Development x Initial Size	-0.127***	-0.133***	-0.136***	-0.133***	-0.138***	-0.139***
	(0.029)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry x Indus. x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,267,858	4,148,445	4,148,445	4,148,445	4,148,445	3,998,000
R-squared	0.956	0.956	0.956	0.956	0.956	0.956

Panel C: Employment

	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty Shock x Experience	-0.092***	-0.089***	-0.089***	-0.089***	-0.088***	-0.093***
	(0.025)	(0.023)	(0.023)	(0.023)	(0.023)	(0.024)
Uncertainty Shock x Leverage ratio	-0.006					-0.011
	(0.009)					(0.008)
Uncertainty Shock x Level of Subsidiary		-0.036***				-0.010
		(0.006)				(0.021)
Uncertainty Shock x # Subsidiaries in Group			-0.009**			-0.005
			(0.003)			(0.004)
Uncertainty Shock x Mean Group Depth				-0.035***		-0.008
				(0.009)		(0.014)
Uncertainty Shock x Public Firm in Group					-0.028***	-0.012**
					(0.005)	(0.006)
Ec. Development x Experience	-0.367***	-0.373***	-0.373***	-0.374***	-0.374***	-0.368***
	(0.105)	(0.112)	(0.112)	(0.112)	(0.112)	(0.112)
Ec. Development x Leverage ratio	0.100*					0.115*
	(0.057)					(0.055)
Ec. Development x Level of Subsidiary		0.012				-0.051*
		(0.018)				(0.025)
Ec. Development x Subsidiaries in Group			0.013***			0.013
			(0.003)			(0.010)
Ec. Development x Mean Group Depth				0.018		-0.018
				(0.012)		(0.021)
Ec. Development x Public Firm in Group					0.060**	0.041
					(0.027)	(0.042)
Uncertainty Shock x Initial Size	-0.025***	-0.024***	-0.022***	-0.023***	-0.023***	-0.023***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Ec. Development x Initial Size	-0.028**	-0.029**	-0.032**	-0.029**	-0.032**	-0.036***
	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry x Indus. x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,267,858	4,148,445	4,148,445	4,148,445	4,148,445	3,998,000
R-squared	0.943	0.942	0.942	0.942	0.942	0.942

Table A-7: Firm Age and Uncertainty Shocks in Stacked Regressions: Robustness to Additional Controls

The table presents estimates from a panel regression examining the relationship between large uncertainty shocks and firms' revenues (Panel A), assets (Panel B), and employment count (Panel C) in a stacked regression setting, following the analysis in Table 4, but including a series of additional control variables. Data are from Bureau Van Dijk's Orbis dataset for the years 2004 to 2022. The regression dependent variables as well as Economic Development, Experience and Initial size are expressed in logarithm. Experience is calculated as 2024 minus the year of incorporation. Standard errors presented in parentheses are double clustered by country and year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Revenues

	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty Shock × Experience	-0.087***	-0.085***	-0.085***	-0.085***	-0.085***	-0.089***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.019)
Uncertainty Shock × Loan Ratio	0.028					0.028
	(0.025)					(0.025)
Uncertainty Shock × Level of Subsidiary		-0.038*				-0.035
		(0.019)				(0.023)
Uncertainty Shock × #Subsidiaries in Group			-0.006			-0.001
			(0.005)			(0.005)
Uncertainty Shock × Mean Group Depth				-0.029		-0.002
				(0.022)		(0.029)
Uncertainty Shock × Public Firm in Group					-0.013*	0.002
					(0.006)	(0.011)
Ec. Development × Experience	-0.405**	-0.413**	-0.414**	-0.414**	-0.414**	-0.398**
	(0.151)	(0.156)	(0.158)	(0.157)	(0.156)	(0.153)
Ec. Development × Loan Ratio	0.365**					0.384**
	(0.131)					(0.134)
Ec. Development × Level of Subsidiary		0.063				-0.039
		(0.037)				(0.068)
Ec. Development × #Subsidiaries in Group			0.026***			0.018
			(0.003)			(0.014)
Ec. Development × Mean Group Depth				0.058**		-0.038
				(0.021)		(0.031)
Ec. Development × Public Firm in Group					0.136***	0.109**
					(0.029)	(0.048)
Uncertainty Shock × Initial Size	-0.042***	-0.039***	-0.039***	-0.039***	-0.039***	-0.040***
	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)
Ec. Development × Initial Size	-0.089***	-0.092***	-0.097***	-0.092***	-0.099***	-0.103***
	(0.022)	(0.023)	(0.024)	(0.023)	(0.023)	(0.025)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry × Indus. × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	43,692,734	42,171,857	42,171,857	42,171,857	42,171,857	40,716,713
R-squared	0.938	0.939	0.939	0.939	0.939	0.938

Panel B: Assets

	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty Shock × Experience	-0.075***	-0.067***	-0.067***	-0.067***	-0.067***	-0.076***
	(0.017)	(0.014)	(0.014)	(0.014)	(0.015)	(0.016)
Uncertainty Shock × Loan Ratio	-0.069***					-0.072***
	(0.007)					(0.007)
Uncertainty Shock × Level of Subsidiary		-0.025***				-0.002
		(0.008)				(0.026)
Uncertainty Shock × #Subsidiaries in Group			-0.008*			-0.017*
			(0.004)			(0.009)
Uncertainty Shock × Mean Group Depth				-0.027*		0.004
				(0.013)		(0.032)
Uncertainty Shock × Public Firm in Group					0.020***	0.057***
					(0.005)	(0.012)
Ec. Development × Experience	-0.291**	-0.285**	-0.286**	-0.286**	-0.286**	-0.291**
	(0.113)	(0.110)	(0.111)	(0.110)	(0.110)	(0.112)
Ec. Development × Loan Ratio	-0.074					-0.054
	(0.085)					(0.081)
Ec. Development × Level of Subsidiary		0.044				-0.136***
		(0.026)				(0.033)
Ec. Development × #Subsidiaries in Group			0.023***			0.010
			(0.003)			(0.009)
Ec. Development × Mean Group Depth				0.063***		0.061*
				(0.018)		(0.032)
Ec. Development × Public Firm in Group					0.128***	0.110***
					(0.010)	(0.020)
Uncertainty Shock × Initial Size	-0.059***	-0.060***	-0.059***	-0.060***	-0.061***	-0.060***
	(0.012)	(0.012)	(0.012)	(0.011)	(0.012)	(0.012)
Ec. Development × Initial Size	-0.136***	-0.141***	-0.145***	-0.142***	-0.147***	-0.149***
	(0.033)	(0.036)	(0.037)	(0.036)	(0.036)	(0.037)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry × Indus. × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	43,692,734	42,171,857	42,171,857	42,171,857	42,171,857	40,716,713
R-squared	0.954	0.954	0.954	0.954	0.954	0.954

Panel C: Employment

	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty Shock × Experience	-0.092***	-0.089***	-0.089***	-0.088***	-0.088***	-0.093***
	(0.025)	(0.023)	(0.023)	(0.023)	(0.023)	(0.025)
Uncertainty Shock × Loan Ratio	-0.006					-0.011
	(0.009)					(0.009)
Uncertainty Shock × Level of Subsidiary		-0.036***				-0.009
		(0.006)				(0.023)
Uncertainty Shock × #Subsidiaries in Group			-0.009***			-0.006
			(0.003)			(0.004)
Uncertainty Shock × Mean Group Depth				-0.034***		-0.007
				(0.009)		(0.015)
Uncertainty Shock × Public Firm in Group					-0.028***	-0.012**
					(0.005)	(0.005)
Ec. Development × Experience	-0.379***	-0.386***	-0.385***	-0.386***	-0.386***	-0.380***
	(0.113)	(0.121)	(0.121)	(0.121)	(0.121)	(0.121)
Ec. Development × Loan Ratio	0.095					0.113*
	(0.065)					(0.062)
Ec. Development × Level of Subsidiary		0.014				-0.055*
		(0.018)				(0.030)
Ec. Development × #Subsidiaries in Group			0.016***			0.018
			(0.002)			(0.013)
Ec. Development × Mean Group Depth				0.020		-0.033
				(0.012)		(0.021)
Ec. Development × Public Firm in Group					0.069***	0.043
					(0.022)	(0.045)
Uncertainty Shock × Initial Size	-0.025***	-0.024***	-0.022***	-0.023***	-0.023***	-0.023***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Ec. Development × Initial Size	-0.031**	-0.032**	-0.035**	-0.032**	-0.036**	-0.040**
	(0.013)	(0.014)	(0.014)	(0.014)	(0.013)	(0.014)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sub. Ctry × Indus. × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Parent Country × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	43,692,734	42,171,857	42,171,857	42,171,857	42,171,857	40,716,713
R-squared	0.941	0.940	0.940	0.940	0.940	0.940

Table A-8: Brexit Referendum: Robustness to Excluding Public Firms Located in the UK

This table follows Table 6 of the paper but restricts the sample to non-UK public firms

Panel A: Event window [0;1]

Panel A: Event window [0;1]	Raw Returns			Abnormal Returns		
	(1)	(2)	(3)	(4)	(5)	(6)
Ref × Older UK Subs	−0.656***	−0.508***	−0.524***	−0.319***	−0.373***	−0.372***
	(0.052)	(0.060)	(0.074)	(0.051)	(0.057)	(0.070)
Ref × Younger UK Subs	−0.359***	−0.182***	−0.135*	−0.092	−0.050	0.019
	(0.061)	(0.061)	(0.073)	(0.062)	(0.060)	(0.070)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Day FE	Yes	Abs.	Abs.	Yes	Abs.	Abs.
Day × Home Country FE	–	Yes	Abs.	–	Yes	Abs.
Day × Sector FE	–	Yes	Abs.	–	Yes	Abs.
Day × Home Country × Sector FE	–	–	Yes	–	–	Yes
Observations	1,548,662	1,541,960	1,360,850	1,518,348	1,511,759	1,333,758
Older vs. Younger (p-value)	0.000	0.000	0.000	0.001	0.000	0.000

Panel B: Abnormal returns over longer event windows

Panel B: Longer event windows	Abnormal Returns					
	[0;1]	[0;3]	[0;5]	[0;10]	[0;20]	[0;30]
	(1)	(2)	(3)	(4)	(5)	(6)
Ref × Older UK Subsidiary	−0.372***	−0.373***	−0.183***	−0.133***	−0.048**	−0.049***
	(0.070)	(0.049)	(0.038)	(0.030)	(0.019)	(0.017)
Ref × Younger UK Subsidiary	0.019	−0.092*	−0.054	−0.040	−0.006	−0.005
	(0.070)	(0.050)	(0.039)	(0.031)	(0.020)	(0.018)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Day × Home Country × Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,333,758	1,333,758	1,333,758	1,333,758	1,333,758	1,333,758
Older vs. Younger (p-value)	0.000	0.000	0.002	0.005	0.035	0.015