The survival of foreign affiliates: a multi-level analysis

Stefania Miricola* Giorgio Ricchiuti† Margherita Velucchi‡

March 17, 2024

Abstract

For a local economy, attracting foreign investments is of prominent importance in light of the positive effects that arise, both directly and indirectly, within the host region. In this work, we aim to assess how important regional characteristics, such as local workforce quality and an R&D-friendly economic environment, affect the life duration of companies targeted by foreign investments. A survival analysis is performed on a sample of more than 100,000 foreign-owned manufacturing firms located in the European Union. A multi-level regression allowing to evaluate both firm-level and location-specific features at two different geographic scales is employed. We find that government quality inside national boundaries plays a leading role, not only in attracting foreign capital, but also in promoting a long-term presence.

Keywords: Survival, MNE, Multilevel, Institutions
JEL Codes: F23, C14, C41, L25

*Mail to: stefania.miricola@imtlucca.it. Università degli Studi di Firenze and Laboratory for the Analysis of Complex Economic Systems, IMT School for Advanced Studies, piazza San Francesco 19 - Lucca, Italy.

†Università degli Studi di Firenze and Complexity Lab in Economics, Università Cattolica di Milano

‡Dipartimento di Scienze Umane, Università Europea di Roma

1 Introduction

It is widely acknowledged that the presence of multinational enterprises (MNEs) in a region plays a pivotal role in the development of the local economy. Indeed, most countries, independently from their development stage, compete for and allocate resources to attracting foreign direct investment (FDI). The activities of MNEs have traditionally attracted policy attention as they contribute to growth and employment by creating new jobs, realise new investments and develop new technologies. Moreover, the scientific literature has shown that inward foreign investments have the potential to enhance the productivity of domestic enterprises (Javorcik, 2004; Keller and Yeaple, 2009). FDIs not only contribute capital, new technologies, and managerial expertise to the host economy, but, through the relationships established with local enterprises, generate effects of technological know-how and knowledge transfer that enhance productivity.

Yet, the importance of attracting FDIs extends beyond the immediate economic effects, as the most significant and enduring benefits derive from establishing long-term relationships. In other words, realizing positive spillovers is a process that, reasonably, unfolds over the long term (WorldBank, 2019; Potter, 2002). Consequently, the length of time a foreign investor remain in a market becomes of great importance as conditioning the full realization of FDI beneficial effects.

This works focuses on the duration of foreign affiliates on European Union markets and looks at those factors potentially facilitating a long-term presence. In particular, we aim to assess the impact of "contextual" features, both at the regional and country level, on the survival of manufacturing companies that are targeted for investment by multinational corporations. We hypothesize the reliability of the institutional context to be among the possible incentives to engage in long-term investments. In this regard, regulatory certainty, as well as a government's commitment to announced policies facilitates strategic business planning. Furthermore, a streamline bureaucracy combined with an elevated quality of public services makes it easier to navigate regulatory requirements, provides greater predictability and increases the likelihood of investors committing to long-term projects and expanding their operations.

As we aim to evaluate how the geographic context a foreign affiliate is plunged

into affect her survival probabilities, we identify our model of choice in a multilevel survival framework. Hierarchical models are useful to account and explicitly model the correlation between study units within the same cluster, such as foreign affiliates in countries and regions. Given the strong territorial component driving business demography (OECD, 2017), employing a multilevel modeling approach is particularly suited for firm survival analysis. Our specification focus on local market characteristics identified at the regional level. First, a stable and transparent political and economic environment is crucial, providing foreign investors with confidence in the security of their investments. Favorable tax policies and incentives, coupled with a well-developed infrastructure, further enhance the appeal of a locality. Additionally, a skilled and educated workforce is a significant draw. A supportive regulatory framework also contribute to the attractiveness of a region for foreign investment.

We believe the present work to be potentially relevant in two aspects. On one side, survival of overseas subsidiaries can be an important performance indicator of local economic policies. On the other, gaining new insights on this topic might help to foster a friendly environment to sustained foreign direct investments and pursue local economic prosperity.

In this paper, we analyse almost two decades of important transformations for the global economy, from 2005 to 2021, and we employ Orbis longitudinal data for around 100,000 thousand firms. In the first place, we find that the quality of institutions has a significantly positive impact on the survival of foreign-owned firms in Europe. From our findings, it emerges that the relevance of government quality is manifested both directly but also through the mediation effect that coordinates other determinants of FDI, such as the annual value-added growth in the region. Within an empirical framework accounting for both between-country and within-country variability, however, it emerges that the factor leading to a longer duration of foreign investments in the market is the quality of institutions evaluated at the national level, rather than at the regional level. The reminder of the paper is organized as follows. In Section 2, we present an overview of the pertaining literature. In Section 4, we introduce data and motivating evidence. Section 5 illustrates the econometric model and Section 6 discusses the empirical results. Section 7 concludes.

2 Literature review

A large body of literature has emphasized the potential advantages stemming from FDI (Markusen, 1984; Markusen and Venables, 1999; Javorcik, 2004; Keller and Yeaple, 2009; Poole, 2013). At the same time, considerable attention has been given to the motives behind multinational corporations' participation in FDI activities, with four primary drivers identified for determining FDI location: seeking unavailable resources in their home economy, accessing new markets, improving production efficiency, and acquiring new technological capabilities (Dunning, 1996). Alongside these factors, the ability of the host economy to create a business-friendly environment is of great importance for the strategic decisions of multinational corporations (Lim, 2008; Hebous et al., 2020). It is moreover in the interest of the host economy to provide adequate institutions to attract and promote FDI. More recently it is been highlighted that encouraging a long-term stay in a market and reinvest is equally important as attracting foreign investors (WorldBank, 2019). In 2019, the World Bank issues a report focusing on how MNEs decision to stay or expand their FDI projects in developing countries had been affected by government conduct, and highlights that the most common reason of FDI withdrawals was the lack of transparency and predictability in dealing with public agencies, along with abrupt adverse regulatory changes.

In economic literature, as far as we know, there is still much work to be done regarding the examination of FDI retention. Tang and Beer (2022) specifically address locational advantages to retain FDI. In particular, they investigate whether the regional innovation environment has an impact on FDI retention in China, where the latter is measured through a survival analysis conducted on foreign ventures by MNEs. They find both regional supply of technicians and intellectual property flexibility to positively affect the permanence of MNEs on the local market, although the second aspect is much more relevant than the first one for MNEs with high expenditure in R&D.

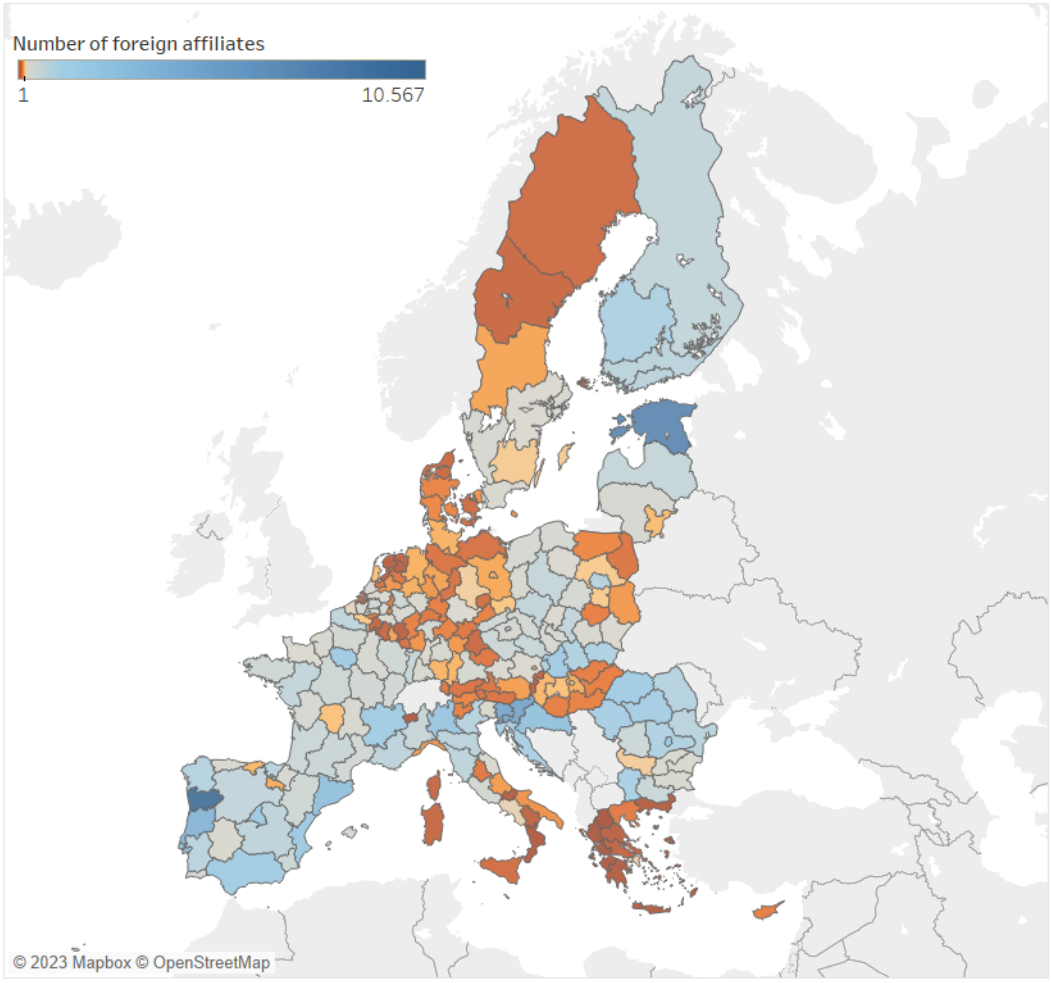
More in general, our work is related to the literature on firm survival analysis. Many contributions analyse how firm-level characteristics, such as size, productivity, innovation and technological level, affect firms' survival (Agarwal and Audretsch, 2001). The positive effect of size and productivity has gathered a large consensus in literature, whereas there is definitely divergence on the role of innovation activity, both empirically and theoretically, with predictions differing according to the model (Ugur and

Vivarelli, 2021). Indeed, the effect of innovation depends on several other factors, such as the technological intensity of the sector and the type of innovation. Other works empirically investigate the relationship between firm survival rates and internationalization. Giovannetti et al. (2011) find that Italian firms involved in export activities and foreign investments exhibit a higher risk to exit the market as they face a heightened competition in international markets. Ferragina et al. (2012) observe that Italian firms owned by foreign MNEs are more likely to exit than domestic ones and interpret this finding in terms of *different degree of persistence* between foreign and domestic: the global networks established by multinational enterprises (MNEs) lead to promptly adjust to adverse shocks in a host economy by relocating their production. It is worth to mention a more recent literature focusing exclusively on determinants of foreign affiliates survival and introducing bilateral covariates to account for the distance between affiliate and parent locations (Arte and Larimo, 2023).

3 Empirical Motivation

The geographical distribution of foreign affiliates provide insights about the variation in the attractiveness of EU regions for foreign investments. In Fig. 1, we observe how foreign affiliates in our sample distribute into NUTS2 areas, revealing a notable degree of heterogeneity, even among regions within the same country. Indeed, EU regions exhibit a substantial variation in the presence of multinational corporations. In Portugal we find the region hosting the highest number of foreign affiliates, namely 10,567, while the lower range values are reported by Greek regions. Consider Italy as an illustrative case: within the same national boundaries, we find regions where the presence of multinational companies is very limited, such as Calabria, which hosts only 9 foreign-owned enterprises, and others, like Lombardy, where the count exceeds 2000 units.

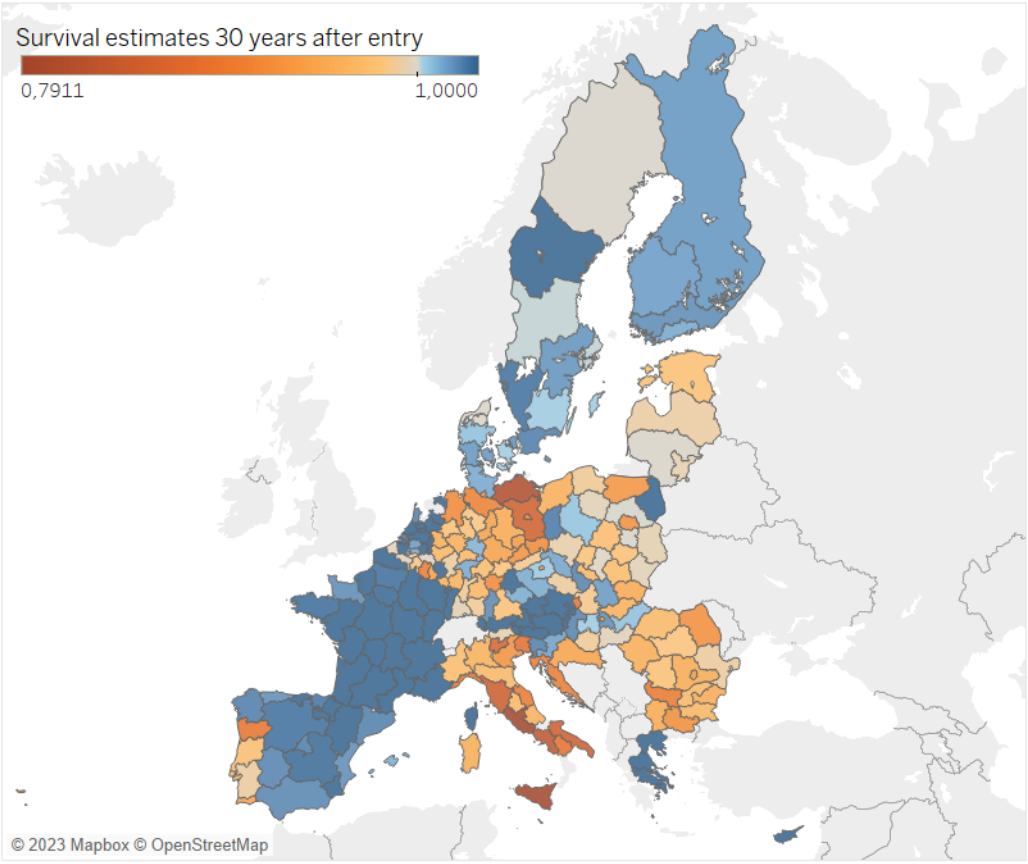
Figure 1: Distribution of foreign affiliates by NUTS2 region



Note: The figure illustrates the number of foreign-owned companies, i.e., firms for which the global ultimate owner, as reported by Orbis, is located in a different country. The latter can be either an EU or non-EU country. Note that we lack observations for Ireland.

In the previous figure, we observe heterogeneity in the ability to attract foreign capital to the region. We now investigate whether a certain degree of variability is also found in the duration of stay on the local market for companies incorporating foreign capital.

Figure 2: Distribution of survival probability in the long run



Note: The figure shows, for each NUTS2 region, non-parametric estimates of survival probability at 30 years from market entry. The latter are obtained according to the Kaplan Meier estimator. Survival probabilities refer to companies reporting a foreign global ultimate owner. We exclude from the map all region hosting less than 18 foreign affiliates, i.e. NUTS2 areas falling under the 10th percentile of the distribution.

In Figure 2, we report non-parametric estimates of survival rates at 30 years for foreign-owned firms by region. In this case, the variability among regions is quite lower, with some countries exhibiting a high level of homogeneity.

4 Data

We collect a comprehensive set of firm-level and region-level (NUTS2) variables. We focus on EU27 manufacturing firms and cover a time period of sixteen years, from 2005 to 2021.

We define foreign-owned companies according to the nationality of the Global Ultimate Owner (GUO) as reported by Orbis[1], the commercial database compiled by the Bureau van Dijk that collects balance sheets and income statements from national public registries of worldwide countries. All EU based companies linked to a GUO incorporated in a foreign country, whether intra or extra-EU, are included in the sample, amounting to a total of approximately 100,000 enterprises active at least one year over the observed time period[2]. We source firm-level financial and business information from Orbis. We use time series for sales, cost of materials, number of employees and tangible fixed assets[3] and obtain labour productivity as the ratio between valued added and number of employees, and capital intensity as the ratio between tangible fixed assets and number of employees. Orbis usefully provides information on incorporation date, firm's status and status date, which allows to identify market entry and exit and define companies' life-span in years.

Our sample consists all foreign-owned companies active at least one year over the time span 2005-2021, so that companies entering market

Unfortunately, our duration data suffer from severe right censoring since only 1160 firms out of the total exit the market during the observed period. To address this concern, we reproduce and confirm in the appendix some well-established stylized facts to ascertain the consistency of our sample.

At the NUTS2 level, we use the European Quality of Government Index (EQI). This index focuses on both perceptions and experiences with public sector corruption, along with the extent to which citizens believe various public sector services are impartially allocated and of good quality in the EU [4]. Fig. 3 shows the most recent estimates of the EQI index. EU average is normalized to zero, whereas negative and positive values are, respectively, below and above the EU average. Red (blue) NUTS2 region report a negative (positive) value for the 2021 EQI index.

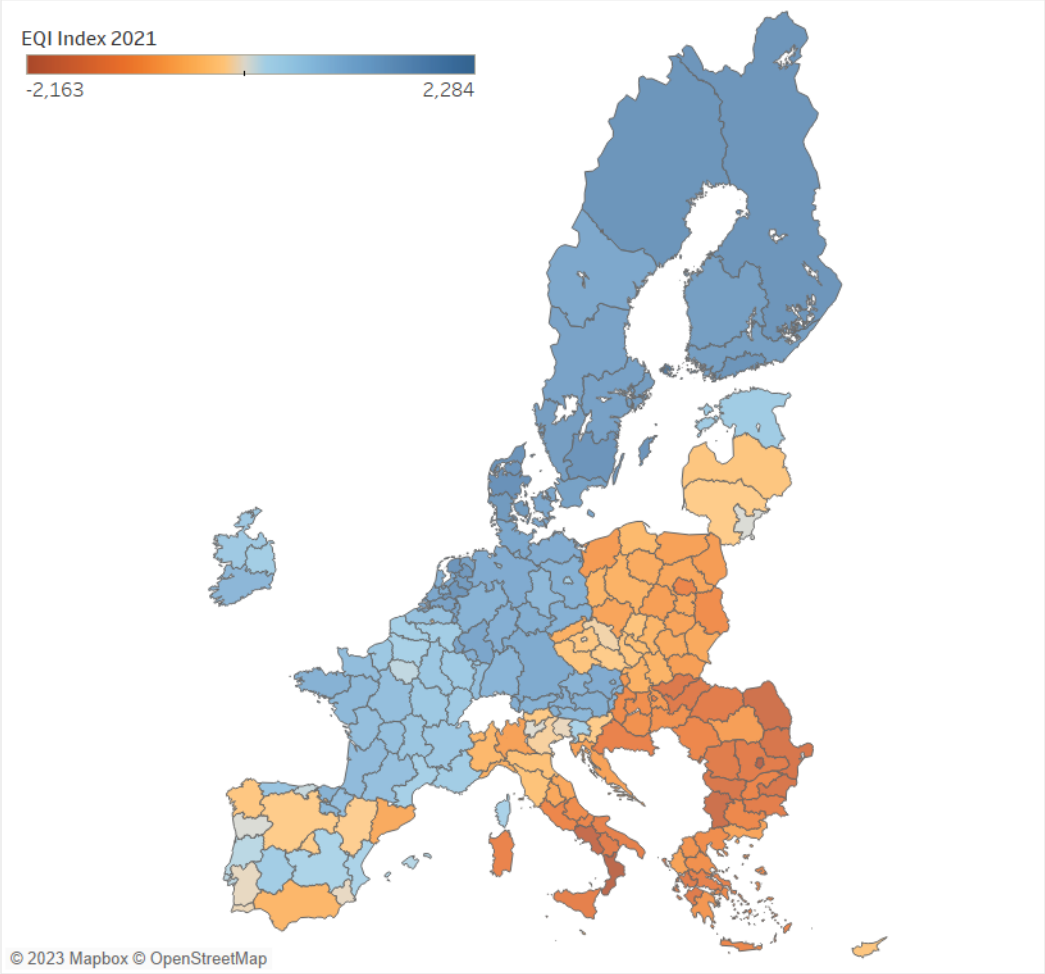
[1]Note that we are not able to tell wheather firms in the sample represent greenfield or brownfield investments, and, most importantly, we do not observe the acquisition year.

[2]Unfortunately, we do not have entry-exit data for any foreign affiliate in Ireland, which is consequently excluded from the analysis.

[3]Due to missing data among firm-level variables, some countries (Malta, Cyprus, Lithuania, Greece, and Denmark) are entirely excluded from the sample.

[4]The EQI index was first published in 2010, and it is issued every three years. https://www.gu.se/en/quality-government/qog-data/data-downloads/european-quality-of-government-index

Figure 3: The European Quality of Institution Index for 2021



Note: The figure shows the most recent estimates of the EQI index. EU average is normalized to zero, whereas negative and positive values are, respectively, below and above the EU average. Red (blue) NUTS2 region report a negative (positive) value for the 2021 EQI index.

In order to account for the availability of qualified labour and a favorable environment for technological development, we source from Eurostat NUTS2 level values for human resources employed in science and technology as a percentage of total labour force and gross domestic expenditure on R&D in all economic sectors expressed as percentage of gross domestic product (GDP) (GERD). R&D investments serve as a crucial determinant of a region's propensity to create a favorable environment for scientific research. Regions with higher R&D allocations are expected to exhibit a more robust infrastructure for scientific inquiry, ultimately influencing the trajectory of technologi-

cal development within those areas.

At the country level, we use the institutional variables developed by Kaufmann et al. (1999)[5]. They construct six indicators, each capturing a different dimension of governance, based on information collected from cross-country surveys and covering from 1996 to 2022 worldwide countries.

The first two indicators, *Voice and Accountability* and *Political Stability and Lack of Violence*, describe the quality of the process of selecting and replacing authorities (for instance, the degree at which individuals can control government actions). *Government efficiency* and *Regulatory Quality* reflect the government's capacity to design and implement policies. *Rule of Law* measures perceptions about contract enforceability, as well as predictability of the judiciary, while *Control of Corruption* captures the extent to which public power is exercised for private gain.

5 Econometric model

In the study of firm survival, the variable of interest is the time duration a company remains active on a market, encompassing the period from entering the market to exiting it. The objective is to estimate the probability that a company surviving until period t, exits the market in period t+1, based on a sample of firm life spans. In this specific case, we look at the number of years between the incorporation date and the exit event, whether it is due to insolvency, corporate transactions, or any other reason. The exit event does not occur during the observation period for most companies, as the latter might survive beyond the observable time window. This causes the duration variable to be right-censored at the last year of the analysis. Moreover, in our dataset, firms may enter at any point in time, either during or before the observation period. In order to assess the impact of explanatory variables on survival we use the Cox proportional hazard regression, as the most widespread non-parametric model used in the survival literature. It is generally formulated as follows:

$$h_i(t) = h_0(t)exp(X_i\beta)$$

where i=...., t=...., X is the set of explanatory variables and β represents the set of estimated parameters.

[5]The database is available at http://info.worldbank.org/governance/wgi/home

Our data are hierarchically structured with firms nested within increasingly aggregated geographic units .

We are interested in a survival analysis that, while assessing the impact of contextual features, accounts for the hierarchical structure of data, whereby companies can be grouped by regions at the lower level and by countries at the higher level. We accordingly apply a multilevel survival model, also referred to as random intercept model. Specifically, a mixed-effects proportional-hazard regression is used to allow for the estimation of both firm-specific and population-level effects. Assuming a two-level nesting structure, the mixed-effects survival model is defined as:

$$h_{ij}(t) = h_0(t)exp(X_{ij}\beta + Z_{ij}b_j) \tag{1}$$

where i and j refer to firms and NUTS2 areas, respectively and $h_{ij}(t)$ denotes the baseline hazard function. X_{ij} denotes the set of observable covariates, whereas Z_{ij} represent a set of latent variables associated with b_j so called random effects, with X_{ij} and Z_{ij} not necessarily coinciding. Importantly, b_js are assumed to follow a multivariate normal distribution with mean zero and variance-covariance matrix $\Sigma_b \sim N_k(0, \Sigma_b)$. 1 can be simplified to the following random intercept model:

$$h_{ij}(t) = h_0(t)exp(X_{ij}\beta + b_j) \tag{2}$$

where, again, i indicates firms and j indicates NUTS areas. b_j follows a univariate Normal distribution and, as a random intercept, shifts the hazard function for each nest j, i.e. for each NUTS2 area. The formulation seen above resembles closely the one of shared frailty survival models,

$$h_{ij}(t) = h_0(t)exp(X_{ij}\beta)\alpha_j \tag{3}$$

where $\alpha_j = exp(b_j)$ is the frailty term acting multiplicatively on the hazard function.

6 Results

We specify a multi-level model to evaluate the effect of contextual factors that, altogether, foster an environment conducive to attracting foreign businesses, thereby stimulating contributions to the local economy. As a start, we examine how some regional

(NUTS2-level) characteristics help sustaining the long-term presence of foreign-owned firms on the territory. In this regard, we consider a stable and transparent institutional environment as well as a highly educated workforce to be a significant draw. In Table 1, we report the hazard ratios obtained from the mixed-effects Cox model, where we also control for an arrow of firm-level covariates. For comparison purposes, we show in Column (1) results from a simple Cox regression. A large variation is seen across regions starting from Column (2), amounting to 14.79 when considering the whole sample of firms, which could have biased results if left unaddressed.

As seen in each column of Table 1, firm-level controls diminish the risk of exit for foreign affiliates. Bigger and more productive firms are more likely to survive on the market, as well as capital-intensive firms. The greater advantage in terms of survival is found between high-tech firms and low-tech: firms operating in low tech industries have an exit probability more than two times bigger than firms in high-tech sectors. These results are in line with findings from the empirical literature on firm survival. Indeed, a negative relationship is systematically found between size and exit risk, most probably because larger companies are more likely to operate near the minimum efficient scale and benefit from easier access to capital markets and skilled labour (Jovanovic, 1982; Ericson and Pakes, 1995; Audretsch and Mahmood, 1995). Moreover, literature suggests lower exit rates for more productive firms (Javorcik, 2004; Hopenhayn, 1992) and firms with higher capital-labour ratios. The latter instance could be attributed to the fact that firms with elevated capital-to-labor ratios may experience a lower ratio between variable and fixed costs (Doms et al., 1995).

Table 1: Two-level Cox model - Hazard ratios

Model:	**Cox**	**Multi-level Cox**		
Sample:	All	All	High EQI	Low EQI
	(1)	(2)	(3)	(4)
Firm-level Covariates:				
Size Category	0.783***	0.662***	0.854**	0.411***
	(0.0340)	(0.0339)	(0.0537)	(0.0374)
LP_{t-1}	0.678***	0.733***	0.738***	0.740***
	(0.0137)	(0.0169)	(0.0209)	(0.0296)
Capital $Intensity_{t-1}$	0.811***	0.855***	0.825***	0.942**
	(0.0120)	(0.0131)	(0.0144)	(0.0282)
Low Tech	2.229***	2.352***	2.385***	2.052**
	(0.452)	(0.483)	(0.625)	(0.683)
Medium-low Tech	1.251	1.590**	1.572*	1.488
	(0.261)	(0.331)	(0.417)	(0.502)
Medium-high Tech	1.093	1.210	1.178	1.244
	(0.232)	(0.258)	(0.318)	(0.432)
NUTS2-level Covariates:				
GVA Growth	0.941***	0.966***	0.957***	0.978*
	(0.00583)	(0.00699)	(0.00886)	(0.0114)
GERD	1.249***	1.810***	1.745***	2.164***
	(0.0589)	(0.196)	(0.223)	(0.542)
HRSTO	1.031***	1.109***	1.113***	1.087***
	(0.00487)	(0.00853)	(0.00967)	(0.0215)
EQI	0.881**	0.564***		
	(0.0442)	(0.0910)		
Variance of the frailty term				
NUTS2-level		14.79***	42.70***	4.702***
		(6.823)	(36.80)	(2.053)
Observations	737,520	737,520	421,903	315,617
Number of groups	No	207	124	83

Note: Standard errors are reported in parentheses (*** p<0.01, ** p<0.05, * p<0.1). Reported coefficients are exponentially transformed. Firm-level variables are in log-levels. **explain covariates**

We now focus on the effect of regional characteristics. In column (2) we estimate the effect of regional characteristics based on our full sample of foreign affiliates. The hazard ratio for the yearly growth rate of gross value added is lower than one, indicating that foreign-owned companies have a higher probability of surviving in a market that experienced economic growth with respect to the previous year. The same is observed for the quality of government index, which plays a prominent role. Indeed, a one-unit rise in the EQI index leads to a decrease in the exit risk of 0.564 times. Foreign affiliates stay longer in regions with a higher quality of institutions. We find, however, that both expenditures on R&D and the share of human resources absorbed by highly

technological sectors increase the risk of exit from the market for foreign affiliates. A possible explanation for this is that in regions where larger resources are allocated to research activities and high-tech sectors are larger, there is a heightened level of competition. This makes survival more challenging for all firms in the market, subsidiaries of multinational corporations included, even if the latter tend to be more productive and larger than domestic ones.

Regional governance is an important factor that deserves further investigations. In particular, we are interested in how the behaviour of other variables is conditioned by deficient institutions. We thus proceed splitting the sample into two set of NUTS2 areas defined according to the EQI index. This also allows gathering some additional insights into the duality observed in map 3 between regions with good and bad institutions. Column (3) and (4) report the same specification run on the subsample of firms located in NUTS2 areas lying above and below the median value, respectively. By comparing the two columns, we note that firm size has a greater relevance in preventing the risk of exit in regions with a low quality of institutions. Another interesting element is that the positive effect of the growth rate of regional value added is less significant. Note that *GVA Growth* is the only other regional variable, besides *EQI*, that has a positive effect on survival, albeit slightly below unity and, therefore, mild. Thus, the only regional variable that helps increasing foreign affiliates longevity loses significance in poor governance NUTS2 areas. This might imply the positive effect to unfold fully when coupled with an efficient institutional framework, thereby reinforcing the argument that quality of institutions plays a leading role on survival.
So far, we ignored the variability in firms' behavior across countries. While we find variance between NUTS2 areas to most certainly play a role in the survival model in Tab. 1, it is important to recognize that, in specific aspects, regions within the same country demonstrate a certain level of homogeneity. We address this by adding a higher hierarchical level in the multilevel analysis to assess the distinct roles of regional and national geographic components. This allows to evaluate the heterogeneity in survival estimates across national economies and across regions within countries. In column (1) of Table 2, we run the baseline model considering firms to be nested into NUTS2 and NUTS2 to be nested into countries. In this case EQI is not significant. This might imply that the effect of institutional quality on survival needs to be evaluated at a more aggregated geographical scale. We thus proceed by introducing the country-level Governance Indicators (GI) created by Kaufmann et al. (1999). The latter provide a set

of measures capturing different factors concurring to national institutions quality. In particular, we employ GIs to disentangle the effects on survival of control of corruption, political stability, regulatory quality, rule of law and accountability.

Table 2: Three-level Cox model

Model:	**Multi-level Cox**	**Multi-level Cox**	**Cox**
	(1)	(2)	(3)
Firm-level covariates:			
Size Category	0.634***	0.646***	0.831***
	(0.0329)	(0.0335)	(0.0393)
LP_{t-1}	0.730***	0.735***	0.686***
	(0.0167)	(0.0171)	(0.0146)
Capital $Intensity_{t-1}$	0.858***	0.860***	0.826***
	(0.0131)	(0.0132)	(0.0121)
High Tech	2.497***	2.491***	2.026***
	(0.512)	(0.511)	(0.414)
Medium-high Tech	1.683**	1.681**	1.187
	(0.350)	(0.350)	(0.250)
Medium-low Tech	1.232	1.235	1.051
	(0.262)	(0.263)	(0.224)
NUTS2-level Covariates:			
GVA growth	0.959***	0.969***	0.950***
	(0.00697)	(0.00732)	(0.00635)
GERD	1.228***	1.172**	1.311***
	(0.0920)	(0.0918)	(0.0736)
HRSTO	1.108***	1.126***	1.034***
	(0.00766)	(0.00955)	(0.00511)
EQI	0.809		
	(0.156)		
Country-level Governance Indicators:			
Control of Corruption		0.989	0.948***
		(0.0120)	(0.00762)
Stability		0.969***	1.016***
		(0.00561)	(0.00230)
Regulatory Quality		0.981	0.947***
		(0.0119)	(0.00685)
Rule of Law		1.020	0.989
		(0.0129)	(0.00678)
Accountability		0.943***	1.104***
		(0.0122)	(0.0102)
Variance of the frailty term:			
Country-level	5.776***	12.24***	
	(3.762)	(11.29)	
NUTS2-level	1.407***	1.521***	
	(0.134)	(0.174)	
Observations	737,520	737,608	737,608
Number of groups	21	21	

Note: Standard errors are reported in parentheses (*** p<0.01, ** p<0.05, * p<0.1). Firm-level variables are in log-levels. Larger values of the WB Governance Indicators indicate better institutions. Note that we employ GIs expressed as percentile ranks.

Results are reported in Table 2. In the second column, we have the results of the

multilevel analysis, whereas in the third column, we report the results of a simple Cox model. Comparing the two columns allows us to appreciate the advantages of our model of choice. Indeed, the Cox model reveals that all country-level variables, except for rule of law, significantly impact survival. The multilevel analysis, on the other hand, enables a more accurate assessment of standard errors, showing a significantly positive effect only for two governance indicators, namely *Voice and Accountability* and *Political Stability and Lack of Violence*, i.e. the indicators capturing how government authorities are chosen by citizens and how they are replaced. This result is aligned with the numerous findings indicating the importance of political risk as a driver of FDI.

7 Conclusions

In this work, we aimed to gather insights into the characteristics of local economies that promote a longer stay on the market for foreign-owned businesses. In particular, we focus on innovation and government quality as factors that we believe to incentivize multinational investments in long-term projects.

We employ a multilevel survival model that simultaneously assesses the impact of regional and national contextual features. This allows us to pinpoint the geographical scale at which the effects of certain characteristics unfold. Some contextual factors may be crucial to survival but might not emerge when examined at either too granular or at too aggregated a level. Indeed, this holds for the quality of institutions, a pivotal element for extending market presence that is significant primarily at the country-level. Conversely, we find that the effects of local GVA growth and of the propensity to innovation activities can be adequately evaluated at the regional level. Our analysis reveals opposite signs for these two variables. Specifically, in a local economy where innovation is encouraged, foreign-owned enterprises have a lower survival rate. This is likely due to more innovative environments also being much more competitive.

Above all, we find that government quality inside national boundaries plays a leading role, not only in attracting foreign capital, but also in promoting a long-term presence. Foreign-owned enterprises have a longer lifespan in locations where institutions function well and are stable. Venturing an interpretation, when multinational corporations evaluate long-term foreign investments, they hinge their decisions on how reliable is a

central government. Therefore, when a region performs exceptionally well compared to others within the same country, it does not influence long-term strategic decisions.

References

Agarwal, R., Audretsch, D.B., 2001. Does entry size matter? the impact of the life cycle and technology on firm survival. The Journal of Industrial Economics 49, 21–43.

Arte, P., Larimo, J., 2023. Revisiting economic distance and its role in foreign subsidiary survival. European Journal of International Management 20, 369–407.

Audretsch, D.B., Mahmood, T., 1995. New firm survival: new results using a hazard function. The review of economics and statistics , 97–103.

Doms, M., Dunne, T., Roberts, M.J., 1995. The role of technology use in the survival and growth of manufacturing plants. International journal of industrial organization 13, 523–542.

Dunning, J.H., 1996. The geographical sources of the competitiveness of firms: some results of a new survey. University of Reading, Department of Economics Reading.

Ericson, R., Pakes, A., 1995. Markov-perfect industry dynamics: A framework for empirical work. The Review of economic studies 62, 53–82.

Ferragina, A., Pittiglio, R., Reganati, F., 2012. Multinational status and firm exit in the italian manufacturing and service sectors. Structural Change and Economic Dynamics 23, 363–372.

Giovannetti, G., Ricchiuti, G., Velucchi, M., 2011. Size, innovation and internationalization: a survival analysis of italian firms. Applied Economics 43, 1511–1520.

Hebous, S., Kher, P., Tran, T.T., 2020. Regulatory risk and fdi. 2019/2020 Global Investment Competitiveness Report: Rebuilding Investor Confidence in Times of Uncertainty .

Hopenhayn, H.A., 1992. Entry, exit, and firm dynamics in long run equilibrium. Econometrica: Journal of the Econometric Society , 1127–1150.

Javorcik, B.S., 2004. Does foreign direct investment increase the productivity of domestic firms? in search of spillovers through backward linkages. American economic review 94, 605–627.

Jovanovic, B., 1982. Selection and the evolution of industry. Econometrica: Journal of the econometric society , 649–670.

Kaufmann, D., Kraay, A., Zoido, P., 1999. Governance matters. Available at SSRN 188568 .

Keller, W., Yeaple, S.R., 2009. Multinational enterprises, international trade, and productivity growth: firm-level evidence from the united states. The review of economics and statistics 91, 821–831.

Lim, S.H., 2008. How investment promotion affects attracting foreign direct investment: Analytical argument and empirical analyses. International business review 17, 39–53.

Markusen, J.R., 1984. Multinationals, multi-plant economies, and the gains from trade. Journal of international economics 16, 205–226.

Markusen, J.R., Venables, A.J., 1999. Foreign direct investment as a catalyst for industrial development. European economic review 43, 335–356.

OECD, 2017. The geography of firm dynamics-measuring business demography for regional development .

Poole, J.P., 2013. Knowledge transfers from multinational to domestic firms: Evidence from worker mobility. Review of Economics and Statistics 95, 393–406.

Potter, J., 2002. Embedding foreign direct investment. OECD .

Tang, R.W., Beer, A., 2022. Regional innovation and the retention of foreign direct investment: a place-based approach. Regional Studies 56, 1757–1770.

Ugur, M., Vivarelli, M., 2021. Innovation, firm survival and productivity: the state of the art. Economics of Innovation and New Technology 30, 433–467.

WorldBank, 2019. Retention and expansion of foreign direct investment: political risk and policy responses. World Bank.