The global recession and the shift to Re-shoring: Myth or reality?

Agelos Delis[1], Nigel Driffield[2] and Yama Temouri[1,3]

[1] Aston Business School, Aston University, UK; [1] Warwick Business School, Warwick University, UK; [1,3]Faculty of Business, University of Wollongong Dubai, UAE.

Abstract

Despite the high degree of attention that re-shoring has recently attracted in the media, we lack detailed understanding of the drivers of such an important strategic change by a multinational enterprise (MNE). We offer the first large-scale analysis of the factors that influence a firm's decision to re-shore. Our analysis is based on 3,683 MNEs from 14 developed countries investing in 66 host countries over the period 2006-2013. Our results suggest that increased re-shoring was triggered by the downturn in the West resulting from the recent global financial crisis. However, our results show that the effect of the global financial crisis on re-shoring is smaller when the distance between parent and subsidiaries becomes larger. In turn, as distance increases, the importance of relative costs declines in explaining re-shoring activity. Finally, MNEs who have engaged in re-shoring in the past are more likely to re-shore again.

1. Introduction

Recent political events surrounding the election of US president Donald Trump and the UK "Brexit" vote have created much uncertainty and speculation by the media surrounding the increasing rise of populist and anti-globalisation rhetoric by politicians throughout the West. Similarly, academic discourse from politics, sociology to economics and international business (IB) is concerned with whether we are witnessing the demise (or at least a decline) in globalisation. Among the supporting evidence invoked by politicians and media commentators with respect to IB trends is the issue of "bringing jobs back home", also known as "re-shoring" in the academic literature. As the Financial Times[1] notes, the political mantra of President Trump appears to have boosted re-shoring activity in the US, with firms recognising the political expediency of this, as well as the potential threat of tariffs on goods imported into the US by American multinational enterprises (MNEs). However, while such moves have made the headlines, our understanding of the re-shoring phenomenon is still in many ways underdeveloped.

A related issue to re-shoring is the management of MNE global supply chains which has come under scrutiny from the perspective of corporate social responsibility (CSR). Walker et al. (2014) discusses in detail the pressure on firms to avoid locations with little labour protection, wages below subsistence level and little regard for health and safety. These pressures have intensified with public campaigns, such as Oxfam's "Behind the Brands". In the IB literature, these issues have also been explored by Luo (2006), Rodriguez et al. (2006), Husted and Allen (2006) and Strike et al. (2006). For example, Luo (2006) bases his analysis on political conduct of the firm generating a more socially desirable outcome. One could

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[1] Re-shoring and FDI boost US manufacturing jobs, Financial Times 29th March 2017.

therefore argue that political expediency, along with the desire for firms to align themselves with a new sense of nationalism could potentially be important drivers of re-shoring.

The recent focus on re-shoring comes on the back of at least three decades of offshoring activities by MNEs. Offshoring has been well-documented empirically and explored from the perspective of the dominant paradigms and theories of the IB literature (see review by Doh, 2005). The main premise of offshoring is to be found in the determinants of the boundaries of the firm (Pereira and Malik, 2015). Indeed, offshoring is at the heart of much of the global value chain analysis in the IB literature and more recently in the international economics literature (Baldwin, 2016). This work tries to explain the location decision, in terms of how a firm divides up its value chain, which in turn is linked to financial performance (Mudambi 2007). Another strand of the literature explores how value chains can be employed in the context of economic development (see e.g Taglioni and Winkler, 2016).

However, more recently the analysis in this tradition has recognised that offshoring is no longer a uni-directional phenomenon, such that firms are also exploring the scope for reversing the process of offshoring. We, therefore, seek to analyse empirically the determinants of "re-shoring" within the dominant theoretical traditions applied to offshoring. Hitherto, most of the comments on this phenomenon has been confined to the more popular media and political commentators focussing on specific cases. For example, when the UK motorsports firm McLaren recently announced it was repatriating its supply chain due to Brexit, this was interpreted as simply a cost based response to the devaluation of sterling. However, in the current economic and political climate, there is an increasing desire for politicians to engage with popularising the repatriation of MNE supply chains for domestic economic and political objectives. This was no different with the McLaren case, where politicians seized upon this opportunity to highlight the superior location advantages of the UK coupled with the supposed national sentiment of UK MNEs. Such examples highlight the need to understand these motives

for reshoring, based on evidence rather than comments in the popular press in order to identify causality.

Therefore, as some MNEs decide to bring back activities that were once established as efficiency seeking foreign direct investment (FDI), we know little about the drivers of this process, and even less about how prevalent it is. In the post-crisis world, this is seen as an important "rebalancing" of developed economies, creating employment for less skilled workers, particularly in depressed regions of a developed country. In this context, this paper aims to contribute to two of the special issue areas highlighted, namely what factors influence a firm's decision to re-shore and when do relationships with subsidiaries become less valuable and more risky to maintain.

1.1 Existing Evidence

The issue of re-shoring has received only limited discussion within the academic literature, with supply chain management taking the lead (see e.g. Casson, 2013; Ellram et al., 2013; Gray et al., 2013). Bailey and De Propris (2014) present a policy framework, building on earlier survey based analysis (Bailey et al., 2013). They argue that one needs to view re-shoring as an extension of the earlier analysis of offshoring and within the wider literature concerned with production dynamics and the international division of labour (Pereira and Budhwar, 2015). Small scale survey data for the UK reports that the decision to re-shore is taken by 1 out of 6 manufacturing MNEs (EEF, 2014) and this trend is estimated to account for 0.4 to 0.8 of annual gross domestic product (PwC, 2014). Indeed, this phenomenon has also been linked to a general slowdown in world trade (Financial Times 25th August 2015). Estimates for the US are more modest; around 700 cases are identified since 2010 by A.T. Kearney (2014) ranging across several sectors of varying strategic importance. For example, high tech industries such as electric equipment manufacturing; transportation equipment; computer and electronic component manufacturing make up 10-15 percent of the cases. Interestingly, industries such as

apparel and textile manufacturing also make up around 12 percent of the cases, suggesting that low tech activity is also being re-shored.

Albertoni et al. (2017) explore this phenomenon in the context of business services, highlighting the extent to which skill shortages in the west may hinder this. The general strategic decision to re-shore depends on the type of product, service or component that is under consideration, ranging from relatively low cost products and services to high value-added items. Equally, one must consider re-shoring as a response to where the apparent benefits of outsourcing / offshoring have been previously over stated, or that the hidden costs of offshoring, particularly in terms of complexity of organisation and the importance of experience in mitigating these costs (Larsen et al. 2013) have been understated. Explanations based on casual empiricism seem to suggest that the potential cost advantages from offshoring have not been delivered, hence leading to more re-shoring (Monarch et al., 2013). This presents an interesting dilemma for IB theory which assumes that the process of globalisation is, if not monotonically increasing, nevertheless uni-directional.

1.2 Our contribution

With the exception of some isolated case studies, mainly for the US and the UK (c.f. The Re-shoring Initiative, 2016), there is limited evidence regarding the scale of this activity, and equally important few cross country comparisons at the firm level. Re-shoring may be triggered by changes in host country characteristics, which after initial MNE entry have become less attractive to the point that continuing operation in the host country is not an option. Moreover, we do not know whether certain types of firms and subsidiaries are more likely to be re-shored.

We analyse the factors that lead MNEs to decide to re-shore and explore this through a multi-level approach, incorporating both firm- and country level variables in both the host and home country. Further, we assume that the initial decision to offshore was linked to efficiency seeking FDI re-shoring. There is no formal, universally accepted definition of re-shoring,

though it is widely recognised to be the practice of bringing activity that had previously been located abroad back to the home country or region. Albertoni et al. (2017) refer to reshoring to mean "the voluntary (i.e. not forced by host country governments) partial or total relocation of business initiatives previously offshored, whether to another location or back home", although the subsequently only focus on the service sector. We, however, focus on all firms across the largest European economies, all founding members of the OECD. These are a set of mature developed countries, who have all engaged in efficiency seeking FDI to various extents, both to Asia and to Central and Eastern Europe. We identify those firms who have reduced their investment in low wage countries, while simultaneously increasing similar activity at home. As we are able to identify (at the four digit industry level) both the home and foreign activity, it is reasonable to assume that where we observe these simultaneous changes, it represents a shift in emphasis away from foreign activity, and towards home activity.

We subsequently uncover the importance of distance, differences in labour market flexibility, and relative wages in order to control for other country level determinants. This is in the spirit of mirroring the well-developed literature on offshoring, which is typically based on internalization theory and transaction cost analysis focussed on relative costs and benefits of offshoring (e.g. Lewin et al. 2009; Doh et al., 2009). Our findings show that re-shoring is persistent, in that MNEs who have done this before are continuing to do so. Interestingly the re-shoring process has sped up during the financial crisis. We also explore the importance of relative costs, size, and distance between the host and home activities which in general has been argued to be the drivers of offshoring due to better technology improving our ability to coordinate across space and closer integration also narrowing the cultural distance between countries.

The rest of paper is structured as follows. Section 2 offers an overview of the theoretical perspectives on re-shoring and derives our hypothesis. Section 3 describes the methodology

and section 4 outlines the data set and offers descriptive statistics. Section 5 presents the results, while section 6 presents a full set of robustness checks of the main results and section 7 concludes and offers some future lines of research.

2. Theoretical perspectives and hypotheses

The standard approach to the issue of offshoring in IB is to apply the lens of internalization theory. This application of internalisation theory can be explored within the setting of Rugman's (1981) CSA / FSA framework for IB, concerning the combination of firm specific factors and country specific factors that facilitate a given form of internationalisation. Offshoring is therefore a two stage process, rooted in the dominant paradigm of IB. The first stage concerns the identification of activities which may be moved abroad but retained within the firm (often efficiency seeking FDI). The second stage concerns the choice of foreign location for such activities.

Building on this framework, we consider both firm level and country level drivers of this process, from the perspective of internalisation theory. A useful framework for this is offered by Casson (2013) who analyses the offshoring decision using internalization theory, and argues that:

"The global supply chain is an economic institution that is always ready and waiting for entrepreneurs to exploit it when the time is ripe. Its economic logic is timeless, but whether this logic dictates its emergence depends on conditions prevailing at the time. Within this context, the formal models discussed in this article can not only explain the rise of globalization in response to trade liberalization and cultural integration, but also, by reversing the analysis, identify emerging circumstances, which may lead to its subsequent demise." (p. 12)

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This, highlights the threats to the global supply chain, or alternatively the forces likely to reverse outsourcing / offshoring decisions.

Bailey and De Propris (2013) argue that the literature on re-shoring takes one of two perspectives. Either it simply focuses on (a) cost and presumes that changing labour costs, transport costs, or access to inputs has become more viable to relocate activity back towards the home centres of production, or (b) alternatively that more volatile demand at home has led to reduction in the importance of scale economies. Thus, as firms recognise the need for responsiveness Gray et al. (2013) and Ellram et al. (2013) argue that three issues have led to the increase in re-shoring. These are the need to manage ones supply chain, trade policy, and a wider perspective on value rather than cost, in terms of the location decision. The supply chain management literature is similar to the IB literature in this respect, as is illustrated by Gray et al. (2013) who borrow extensively from the IB literature, to develop their analysis of risk, factor costs, network effects, and distance at the heart of a location decision.

Central to this issue is the concept of risk that is involved in such changes in strategic direction of the business, which includes significant sunk costs, skilled labour, and access to capital, especially since the global financial crisis. We therefore seek to develop our hypotheses, controlling for changes in cost structures, and in firm performance in the foreign country. Larsen et al. (2009) explore the hidden costs of outsourcing / offshoring in terms of the complexity of operations. Focussing on more complex, knowledge-intensive activities and product development, building on Lewin et al. (2009), they stress the fact that managing a globally dispersed organization is often more costly than they had hitherto expected (Dibbern et al., 2008; Stringfellow et al., 2008). They go on to highlight that seldom are the anticipated costs savings achieved, but that experience plays a significant role in the success of the venture.

We seek therefore to explore some of the processes that may lead to the reversal of outsourcing / offshoring.

Stringfellow et al. (2008), for example, argue that despite the savings in labour costs, about a half of the outsourcing arrangements entered into end up being terminated. They ascribe this to the invisible costs, which Stringfellow et al. (2008) characterise as "interaction distance" between the two parties. We therefore seek to explore the phenomenon of re-shoring in the same vein and argue that the theoretical lens for viewing re-shoring is internalisation theory, and by extension the analysis of global value chains (see e.g. Mudambi 2007, 2008). However, one needs to extend the traditional analysis of offshoring or outsourcing that essentially focuses on location theory and relative costs, to the interaction between this and the supply chain literature, see for example Casson (2013). This requires an understanding of the relationship between the parent company and the activities that are potentially re-shored, analysis of foreign affiliates concerned, and the economic conditions at home and abroad. The existing literature partially considers the first of these, though typically through the use of case studies focuses on the relationship between the firm and its customers, often from a marketing perspective. Our aim is to extend this, building on our initial theoretical premise, we propose a vector of both firm level, and country level constructs that explain the re-shoring decision, and we explore these further as we develop our hypotheses.

It is apparent that the issue of re-shoring has received a good deal more attention since the most recent global economic downturn, and more recently in the light of President Trump election and Brexit. In a series of studies, Grappi et al. (2013, 2015a, 2015b) highlight the customer responses to both offshoring and re-shoring. They show that during the time of significant increases in unemployment at home, re-shoring became, not merely part of a company's CSR practices (Walker et al., 2014), but part of a company's persona or marketing strategy. During and since the financial crisis, as Grappi et al. (2015b) point out, it has become

popular for firms to stress their commitment to their home economy, as part of their marketing strategy. It was - and still is – common for firms to stress their home based call centres, and to emphasise that their goods are for example "Made in the UK". Grappi et al. (2015b) emphasize the positive responses that Italian firms had to re-shoring, to "Made in Italy" labels, such that firms were seen to be contributing to the local economy at a time of high unemployment.

We are concerned therefore to explore the extent to which there has been an actual shift in the location of activities, with an increase in the propensity for re-shoring since the onset of the crisis. As the crisis hit, relative wage costs declined in the developed world, and labour markets slackened. Skill shortages had been very acute for some time, and had been driving up earnings in certain key sectors, which also had seen high levels of internationalisation. These were reduced as many firms experienced significant reductions in demand and real wages, particularly in Western Europe where the decline was significant in many sectors. As a result, it is possible that re-shoring became more attractive.

It is important to distinguish between the real "cost based" increase in the propensity to re-shore, compared with an apparent increase of a firms stakeholder communications in its home country. We argue that some firms have an increased propensity for re-shoring, based on this persona, and that ceteris paribus, firms who have shown an increased propensity for re-shoring in the past, continue to have higher propensities for it in the future. Clearly some MNEs feel this pressure more than others, and this leads to the first hypothesis:

H1: The recent global financial crisis has increased the likelihood of re-shoring.

Our attention now turns to the firm level drivers of these changes. Zlate (2016) for example argues that offshoring is highly pro-cyclical. In other words, the propensity to relocate activities abroad increases as output expands. As such, one would expect to see the reverse

during a downturn. However, one needs to view re-shoring within the dominant paradigms of IB. In their application of internalisation theory, Johansen and Vahlne (1977, 2009) stress the importance of incremental development through learning. Clearly, while some of the elements that drive this process, such as liability of foreignness or institutional distance apply less to the issue of re-shoring than to incremental internationalisation, one would still expect some parallels.

The literature surrounding incremental internationalisation highlights the importance of risk, within internalization theory. In order to analyse this, we adopt the framework of Doh et al. (2009) who examine the offshoring decision, by applying a similar framework for the reverse process. This has at its heart two presumptions. The first is that, as Casson (2013) above notes, re-shoring may simply be a partial reversal of the globalisation process, or that with increased transportation and insurance costs, that location advantages associated with offshoring have declined. Given the reduction in risk that is associated with learning, one can apply a similar logic which is used by the learning by exporting literature (Love and Ganotakis, 2010; Salomon and Jin, 2008). As such, firms which learn how to re-shore may lead them to further re-shore in the future. This leads to the second hypothesis:

H2: MNEs who have engaged in re-shoring in the past are more likely to do so again.

Theoretically, the relationship between re-shoring and distance is rather ambiguous. We seek therefore to extend this analysis to the issue of re-shoring, acknowledging that re-shoring is essentially the reverse of the offshoring literature. On the one hand, the standard treatments of distance IB based on for example internalisation theory, would predict that re-shoring would increase with distance. Equally, in a similar vein, Ghemawat (2001) applies

similar analysis to the problems faced by IB, highlighting the importance not merely of physical distance, but also institutional distance and cultural distance.

Albertoni et al. (2017) explore the importance of both physical and cultural distance in explaining reshoring. They however treat this as a monotonic process, arguing that as outsourcing / offshoring is more likely where both cultural and geographic distance are smaller, then a priori distance may influence the reshoring decision. We seek however to extend this argument. We borrow from Bouquet and Birkinshaw (2008), who explore the nature of the parent-affiliate relationships, focussing on how affiliates may increase their 'voice' within the corporation. We in turn seek to employ this analysis by examining the importance of the complex nature of these relationships. We see performance as more than simply a short run measure of financial returns to a given investment, but as indicative of the ability of the firm to combine its firm specific advantage with the locational characteristics of the host country is question. In the context of re-shoring, this suggests that a combination of factors, both firm specific and location specific may lead to an increases in the propensity for re-shoring, exploring for example how and why distance is important, building on the work by Larsen et al. (2013) and Stringfellow et al. (2008). Equally, we posit that the importance of distance in reshoring warrants further investigation. While on average one may expect distance to have a negative impact of the propensity for offshoring / outsourcing, it does not necessarily follow that distance will increase the likelihood of reshoring, or that the effect is monotonic.

Gooris and Peeters (2014) for example examine the effect of home/host country distance in offshore governance choices. They argue that distance creates different forms of uncertainty, based on the importance that different forms of distance have on different strategic decisions. Building on the critique of the 'illusion of equivalence' criticized by Shenkar et al. (2001), they argue that the impact of distance is non monotonic, and that a more fine-grained and context-specific analysis is required. Put simply, the greater the distance, the greater the

economic case for re-shoring initially, considering transport and coordination costs, as well as relative costs of production. In terms of the reversal of this process, the greater the distance, the less individual factors matter. Rather, they argue that dissimilar home–host contexts impact on the relative importance of the other explanatory factors. We argue, that combining the analysis of the importance of distance for outsourcing / offshoring, with the analysis of both Shenkar et al. (2001) and Gooris and Peeters (2014), that distance mediates the impact of the key drivers of re-shoring. Analysing the reversal of a decision that was subject to consideration of the importance of distance, we argue that the important question is not whether distance matters in itself, but whether distance matters in conjunction with the other key drivers. This leads to the third hypothesis in two parts:

H3a: As distance increases, the importance of relative costs declines in explaining re-shoring.

Extending this, our priors are similar regarding the interaction between the crisis and distance. Building on hypothesis two, this suggests that as distance increases, then the importance of the crisis diminishes. Building on the motivation of hypothesis two, we argue that, if indeed the crisis has motivated re-shoring on the basis of more favourable conditions at home, as well as firms wishing to appear more committed to the home country, then distance will reduce the marginal effect of the crisis in motivating re-shoring.

H3b: As distance increases, the marginal importance of the crisis in explaining re-shoring declines.

3. Methodology

In order to test our hypotheses, it is necessary first of all to focus on the baseline model. This develops from standard IB theory, focussing on location advantages and developed from internalisation theory, capturing the most obvious aspects of location decisions. This includes relative costs between home and host countries, relative performance of the affiliates, ease of relocation, and other measures of institutional quality.

With regards to estimation, we are using correlated random effects probit estimation to address potential endogeneity between an MNE's re-shoring decision in a given year and our variables measuring a firm's operations such as wages or turnover which may be changing at a similar time as the re-shoring decision. The advantage of correlated random effects is that it takes into consideration unobservable subsidiary specific (time invariant) characteristics, (for example, working practices in the affiliate) and also allows these subsidiary specific time invariant unobserved characteristics to be correlated (to some extent) with the other explanatory variables. In order to minimise spurious correlation between the decision to relocate and other non-observables, we also control for parent-country and parent-industry, by including full sets of dummies at these levels. We therefore, estimate the propensity to Re-shore for MNE i its activities from subsidiary j at time period t, *Pr(Re-shore)$_{ijt}$* , conditional on a set of covariates to examine hypotheses 1, 2 and 3 as follows:

$$Pr(Re\text{-}shore)_{ijt} = constant + \beta_1 Re\text{-}shor_{ijt\text{-}1} + \beta_2 Crisis_t + \beta_3 X_{ijt} + \beta_4 X_{ht} + \varepsilon_{it} \qquad (1)$$

where Re-shore$_{ijt}$ denotes whether the *ith* MNE has re-shored from subsidiary j in year t. The variable Crisis is a dummy, which takes the value of 1 from 2009-2013. X_{ijt} contains variables that are subsidiary-parent ratios (i.e. the ratio of average wages, capital stock and turnover

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between the *jth* subsidiary and its *ith* parent). While X_{ht} contains institutional variables of foreign exchange, hiring and firing practices and property rights at the host country *h* at time *t*.

Furthermore, our estimation is based on Wooldridge's (2005) correlated random effects probit model. This means that we have added the mean of all parent-subsidiary time varying variables for each individual parent and a dummy variable which equals to the value of the dependent variable at the beginning of the sample period to correct for the possibility that the stochastic process of re-shoring has not begun with the first year in our sample, but earlier[2].

In order to examine our three hypotheses, one needs to consider re-shoring within the context of its wider drivers, and on the importance of location advantage more generally. Location theory within IB emphasises the interaction between firm specific advantages of the MNE, and its ability, to amplify these using the location advantages of the foreign country (Driffield et al. 2016). It is important that our analysis is informed by the literature of affiliate exit. This issue of longevity of foreign investments has been discussed for a considerable period of time, with the modern literature dating back to McAleese and Counahan (1979). Much of this derives from the literature which has developed following Boddewyn (1983), and is an IB perspective on the more general exit literature (see e.g. Siegfried and Evans, 1994). This analysis develops a line of argument which links exit to a vector of variables capturing affiliate performance, cost changes and risk changes. As Mata and Portugal (2000) and Belderbos and Zou (2009) demonstrate, it is important to consider these variables within a model of re-shoring. We therefore control for exchange rate changes, and importantly investor property rights protection, as both have been linked to subsidiary exit. Finally, at the country level there is the ease of hiring and firing, such that we expect that the ease with which a firm can re-shore

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[2] This is generally referred to in the methodological literature as the initial conditions problem, see Wooldridge (2005).

away from a foreign country to be positively associated with its decision to re-shore. Thus, as the host country labour market becomes more flexible, the likelihood of re-shoring increases.

The rationale for the inclusion of the three subsidiary/parent ratio variables is that it is essentially to control for certain characteristics of both the parent and the subsidiary. Since the decision to re-shore is likely to be affected by factors that relate not only the affiliate, but the affiliate compared with the parent. For example, firm performance and scale of investment of the affiliate may well in themselves influence re-shoring, but the relative values of these variables also matter when compared with the parent. Equally, the ratio of average wages between a subsidiary and its parent captures relative labour cost differences, and we expect this variable to have a positive sign. The ratio of subsidiary stock of tangible assets over its parent stock of tangible assets is included as a proxy to the relative importance of capital between the two interlinked firms. When the stock of tangible assets of the subsidiary is increasing relative to the one of the parent, then the affiliate is becoming relatively more important in the value chain of the parent, and in such a case it is expected that the parent will be less willing to re-shore. Finally, the ratio of subsidiary's turnover to parent's turnover is a measure of relative performance. When this ratio is increasing we expect that ceteris paribus, the parent will be less likely to engage in re-shoring its activities from this particular subsidiary.

4. Data

The empirical model described above is estimated using firm level data on the re-shoring decision of MNEs from 14 developed countries for the period 2006-2013. Our data covers the manufacturing sector only. The dataset is collected from ORBIS, which is a comprehensive and rich firm-level dataset provided by Bureau van Dijk.[3] Bureau van Dijk collects financial, economic and other firm-level information from various sources, including commercial and

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[3] BvD is a leading electronic publisher of annual account information on private and public firms around the world. For further details regarding the data, including access issues, see www.bvdep.com.

official registries. We use information on firm characteristics, such as location, turnover, employment, wages, industry classification on an annual basis, and we can crucially observe whether parent firms have reduced their operations in their affiliates abroad and at the same time increased employment at home. Specifically, we define Re-shoring as:

i. a decline in a subsidiary's[4] employment by 10% and

ii. an increase in employment for the parent[5] within the next 2 years

For example, assume Parent A in UK owns Subsidiary B in China. We count as offshoring; a 10% decline in Subsidiary B employment in year t, followed by an increase in employment in Parent A in year $t+i$, where $i=0,1$ and 2. Our definition could be termed as the "intensive margin" of re-shoring. Since a firm may have more than one foreign affiliate and therefore qualifies potentially as having carried out more than one re-shoring, we construct the dataset in bilateral form. In other words, our dataset includes 14 OECD countries (where the parent firm is located) and 66 different host countries (where foreign affiliates are located). Each parent firm has at least one foreign affiliate, in which case it appears once in the dataset with that home-host combination. Therefore a parent firm appears as many times as it has affiliates in different host countries.

Our definition of the re-shoring variable implicitly makes a number of assumptions. In particular, we first assume that re-shoring is to some extent a reversal of efficiency seeking FDI (offshoring) from labour abundant countries with relatively lower labour costs to countries with relatively higher wages. For this reason we have restricted our sample to only Less

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[4] In order to avoid having data for financial corporations that might initiate/cease operations in a country for accounting/tax avoidance reasons, we restrict the sample of subsidiaries to operate only in manufacturing and some non-financial services, NACE codes: 10-33, 58, 62, 63, 69, 70, 71, 72, 73, 74, 78 and 82.

[5] Again, in order to avoid having data for financial corporations that might initiate operations in a country for accounting/tax avoidance issues we restrict the sample of parents to operate only in manufacturing.

Developed countries as hosts, with parent firms based in developed countries. Re-shoring implies a significant reduction in subsidiaries' activities and an increase in parents' activities. We therefore first consider a change in the volume of activities in the subsidiary, alongside an employment increase at home. In terms of defining our re-shoring variable, we operationalise this as a 10% reduction in employment in the affiliate, following Pennings and Sleuwaegen (2000) and Dewit et al. (2013).[6] Finally, our definition of re-shoring requires just a positive increase in parents 'employment and is clear that we do not treat this symmetrically to the change in subsidiaries' employment. The explanation for this lays on the fact that Developed economies have relatively less labour intensive production technology compared to Less Developed economies. For example, a good that is produced in a Less Developed economy will on average use more labour than in a Developed one. Hence, if re-shoring is taking place; a product will not any longer be produced in a LDC and its production is going to be moved back in a Developed country, then the number of workers that are going to be laid off in the subsidiary should be larger than the new workers hired in the parent.

Furthermore our definition of re-shoring takes a more cautious approach when it measures re-shoring. In particular, we restrict the increase of employment in the parent firm only and not in other subsidiaries located in the parent country. We have specifications where we restrict the definition only to parents and subsidiaries to be in the same NACE two digit industry without any significantly different estimates quantitatively or qualitatively. A more relaxed definition will make more difficult to control for other unobserved effects happening at the same time (i.e. an increase in employment of a domestic subsidiary that produces a completely different product and is not actually the result of re-shoring) and at the same time will become significantly more difficult to operationalise our definition with the actual data.

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[6] We experimented with different thresholds for the employment changes, but qualitatively the results remain unchanged. This is discussed in more detail as we discuss robustness testing

The sample consists of all parent firms located in 14 OECD countries and their subsidiaries in non-OECD and non-tax haven countries. Parent firms are only from the manufacturing sector, while their subsidiaries are in manufacturing plus some services (but not financial ones). We use two-digit primary NACE industry Codes to distinguish firms in the manufacturing sector (i.e. NACE 10-33). Since our analysis is based on registered firms and their filed accounts, all large firms as well as a significant share of small and medium sized firms are included in the database, which provides a good coverage across our sample of developed countries.[7]

Annual data on the institutional variables are obtained from the World Economic Forum Competitiveness Report and the ICRG database. The first variable we use is an index on "Hiring and Firing practices", which is a survey question to managers that asks "In your country, to what extent do regulations allow flexible hiring and firing of workers? 1 = not at all; 7 = to a great extent". The second index is on "Property rights" which asks "In your country, to what extent are property rights, including financial assets, protected? 1 = not at all; 7 = to a great extent". The third institutional variable is foreign exchange, which measures the nominal exchange rate of the host country versus the US dollar, which we source from the World Bank. We also control for subsidiary-parent specific variables. In particular, the three variables that we use are constructed using the following formula:

$$\log(Z_{ijt}) = log\left(\frac{z_{jt}}{z_{it}}\right)$$

where z_{jt} indicates average wages, turnover and capital for subsidiary j at time t and z_{it} denotes average wages, turnover and capital for the corresponding parent i at period t. Thus we are able

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[7] Desai *et al.* (2003) discuss data collection by Bureau van Dijk and conclude that, across countries, the database represents national economies quite well. Klapper *et al.* (2004) also point to its large coverage compared to other data sources.

to construct these three subsidiary-parent specific variables namely relative wages, relative turnover and relative capital.

Table 1 shows the coverage of 3,683 MNEs with headquarters in 14 European countries[8] that either re-shore or not, at some point during our sample period 2006-2013. Since re-shoring is quite a drastic decision, it is not surprising that MNEs that actually re-shore make up a relatively small proportion of all MNEs (column 1). Overall, 13 percent of all firms (i.e. 3,683 MNEs) have engaged in re-shoring at least once and from at least one subsidiary during the period 2006-2013. However, the distribution also shows interesting heterogeneity across countries. For example, the incidence of re-shoring ranges from 0 percent in Norway, 7-8 % for the UK, France, Ireland and Portugal to 12-20 percent for several other countries including, Germany, Finland, Italy and Sweden. These parent MNEs own 5,934 subsidiaries in 66 Less and Medium Developed countries[9]. From those 5,934 subsidiaries, 526 have been involved in re-shoring activities.

(Table 1 here)

Table 2 presents the distribution of re-shoring activity across the various industries for the manufacturing sector. It is important to note that re-shoring is not exclusively occurring in certain industries. On the contrary, it seems regardless of whether industries are classified by their technological sophistication (i.e. low versus high tech) or their market structure in terms of competition, the event of re-shoring is seen in almost all industries across the manufacturing sector.

(Table 2 here)

Table 3 shows the particular region of the world from which re-shoring is taking place. Most of the subsidiaries in our sample are re-shored from Central and Eastern Europe, whereas

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[8] Please see Appendix for the more details about these 14 OECD European countries.
[9] Please see Appendix for more details about these 66 Less and Medium Developed countries.

much fewer are observed from Asia, the Americas and Africa. Table 4 offers descriptive statistics on all our explanatory variables. The subsidiary-parent ratio of relative turnover shows that MNEs that re-shore are, on average, smaller in firm size compared with MNEs that do not re-shore. However, the ratio of average wages and capital stock are very similar between the two types of MNEs. The comparison across institutional variables shows that re-shoring MNEs face marginally lower nominal exchange rates and hiring and firing, but slightly higher property rights in host countries compared with non-reshoring firms. Interestingly, the crisis dummy shows a higher mean for re-shoring MNEs compared with non-reshoring MNEs indicating that the global financial crisis seems to be an important determinant in the decision to re-shore.

With regards to the ownership structure between parent firm and their subsidiaries, there are very few parents that have less than 20% stake in a subsidiary, less than 4% of all MNEs in the sample. Equally, more than 88% of parents own at least 50% of their subsidiaries, which clearly indicates that the vast majority of parent MNEs in our sample are majority owners and hence more likely to have a long-term relationship with their subsidiaries.

(Tables 3 and 4 here)

5. Results

Table 5 shows our main results in which the model is estimated with a correlated random effects probit model. In terms of firm characteristics, our results show a positive and significant coefficient on relative wages. This suggests that as the ratio of wage rates paid in subsidiaries to the ones paid in the parent increases, the likelihood of re-shoring also increases. The coefficient on relative turnover is negative and statistically significant, which indicates that as the performance of the subsidiary improves relative the parent firm, the likelihood of re-shoring diminishes. The coefficient on the relative capital between subsidiary and parent is also

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negative and highly significant. This indicates that parents are less likely to re-shore from subsidiaries that have a relatively high level of capital.

Columns 1 to 4 also demonstrate that as "Hiring and Firing Practices" become more flexible, the likelihood of re-shoring increases, through the ease of hiring and firing. Interestingly, the coefficients on "Property Rights" and "Foreign Exchange" are statistically insignificant, suggesting in the first instance that concerns over expropriation do not drive re-shoring. Also, exchange rate risk appears not to be a major consideration, although currency fluctuations may well feed into financial performance and thus influence re-shoring indirectly.

(Table 5 here)

Having established the results for our firm-level controls, our attention turns firstly to hypothesis 1. Even after controlling for the most likely drivers of re-shoring, we find a strong relationship between the onset of the financial crisis and the firm level propensity to re-shore, as represented by the Crisis period dummy in all specifications. This suggests that those MNEs which are at pains to stress their commitment to their home country have since the onset of the crisis, sought to re-shore certain activities.

Columns 3 and 4 control for physical distance between the parent and the subsidiary, and demonstrate that the results reported above are robust to controlling for distance. Our estimation takes into consideration unobserved parent-subsidiary time invariant characteristics and examine hysteresis (re-shoring status the year before). We therefore include a 1-year lagged dependent variable to test for hysteresis in re-shoring and the value of re-shoring at the 1st year of the sample to control for persistence. Our results suggest a degree of hysteresis in re-shoring, where MNEs who have re-shored in the past year are more likely to continue to do so in the next year.

Taken together the results concerning our first two hypotheses indicate that learning over re-shoring is as important as learning in internationalisation. They also point to a change in strategy since the onset of the crisis, in terms of MNEs' commitment to their home country. The control variables relative wages and relative turnover have coefficients with the expected sign, similar magnitudes and are highly significant as before.

Moving to our third hypothesis, concerning the impact of distance, figure 1 shows that as distance increases, the effect of wage differences re-shoring declines. The positive marginal effect of relative wages between subsidiary and parent is higher during the crisis years. But this differential effect disappears as the geographical distance between the subsidiary and parent increases. This implies that as distance increases relative labour costs matter less in explaining re-shoring during the crisis period. We obtain similar results, in qualitative terms, for the interaction between the Crisis Dummy, distance and the other 2 subsidy-parent specific variables. The Marginal Effect for each individual variable becomes insignificant around a distance of 4,000 kilometres. An explanation for this, which is also consistent with our data (re-shoring is taking place from countries around Europe to EU-core countries), could be that European MNEs did re-shoring from close by countries, as a way to restructure their value chains and also diversify. They brought back to the headquarters operations that were relatively close (less than 4,000 kilometres away, that is why the Marginal Effects are significant) and also their economies were synchronised to EU's economies, but left more or less unchanged far away operations (China or India), since their economies followed a different trajectory from Europe's (Pereira and Scott, 2015). That is distance might capture an aspect of diversification effect that enters interactively and not as standalone explanatory variable. This therefore provides support for hypothesis 3a. Similarly, Figure 2 shows the marginal effect of the interaction between distance and Crisis dummy, and the extent to which the importance of the crisis declines with distance. This we take as support for hypothesis 3b.

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(Figure 1 and 2 here)

5.1 Post-Estimation

We now turn to more detailed investigation of these effects, examining differences between parent countries, the importance of differences in hiring and firing practices (labour market flexibility) between countries, and finally the importance of distance. Figure 3 illustrates the marginal effect of a change in relative wages on the probability of re-shoring, and compares these values across parent countries, for both the pre and post-crisis period. The marginal effect for each subsidiary-parent relationship is higher in magnitude during the crisis for every parent country[10]. Thus, while the estimation results discussed above illustrate the importance of relative wages in explaining re-shoring, we can also demonstrate that the importance of relative wages between home and host increased for all parent countries during the crisis period, highlighting the role that the crisis had in re-shoring.

(Figure 3 here)

Figure 4 illustrates similar relationships with respect to labour market flexibility in the affiliate country. The marginal effects are of a smaller magnitude than for labour costs differences, although the pattern is remarkably similar. The crisis amplified the importance of the ability to hire and fire in the host country, with labour market flexibility increasing the propensity for firms to re-shore. It is also interesting to note that the smallest effects, in both figures are for Norway, a country that lies outside the EU, and hence may be less able to benefit fully from the scale economy effects of re-shoring.

(Figure 4 here)

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[10] For countries that the observations are not that many (Ireland, Netherlands, Norway and Portugal), estimates tend to be not significant.

6. Robustness checks

In order to check the robustness of our key results, we experimented with a number of estimators and alternative specifications. Firstly, and perhaps most important, we test the validity of our assumptions regarding the definition of the re-shoring variable, and check the sensitivity of our results to these assumptions. We begin by varying the threshold of 10% employment change that we apply as our indicator of a reduction in employment abroad. Clearly, given that this is the dependent variable, this changes the number of observations of re-shoring that we find. However, we vary this using both 5% and 15% thresholds, and the results remain qualitatively unchanged. This is also true if we increase the threshold to 20%, but then we have significantly fewer re-shoring observations once we are that restrictive. These results indicate that our choice of threshold is reasonable and that our results are not specific to it. We discuss these briefly in turn, but for the sake of brevity we do not report all of the results.[11] Overall, in all of our robustness checks the significance of the key variables testing hypotheses 1, 2 and 3, as well as the main control variables remained unchanged.

Then, we explored whether we may have excluded a variable that could potentially influence the decision of an MNE to engage in re-shoring. We therefore added to the above specifications the following variables: a) the subsidiary's value added share on its turnover[12], b) a core dummy variable measuring whether the parent and the subsidiary are doing business in the same industry or not, c) an alternative measure of labour market flexibility, redundancy

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[11] Furthermore, we check for the possibility that some parents might increase employment in subsidiaries in other countries, while reducing employment in a subsidiary in another country and increasing employment at home. We have checked our data and there are 6 parents with 17 subsidiaries where this pattern emerges. We estimated our econometric specification after removing these observations and the results remain intact both quantitatively and qualitatively.

[12] We also tried a specification in which we added the subsidiary's value added share on its turnover and excluded the variable Log Relative Turnover, because of potential collinearity between the two. Furthermore, we have used interactions between the subsidiary's value added share on its turnover and the Crisis Period Dummy, but once more the inclusion of these interactions did not alter the main findings while the coefficients of the interactions were not statistically significant.

costs, the cost of employee compensation following dismissal[13], d) various measures of distance between subsidiary and parent countries[14], e) financial constraints in subsidiary or parent or both, f) investor protection and g) an embeddedness variable that captures the number of years the subsidiary has been under the ownership of the parent in the particular host country.

The rationale for the inclusion of the subsidiary's value added over its turnover in the estimation lies in the simple hypothesis that subsidiaries that have a high value added over turnover are more likely to be providers of very important and valuable intermediate inputs for the production of the parent firm's final good and hence, we would expect to observe a lower likelihood of re-shoring in such a scenario. Similarly, the inclusion of a core dummy in the empirical specification could again test the "importance" of the subsidiary from the point of view of the parent. Whereas the inclusion of another variable related to subsidiary's labour market flexibility instead of Hiring and Firing Practices is based on the assertion that the latter could potentially have been not relevant, because it measures in general additional costs, while the former is clearly expressed in monetary units.

We also explored the importance of distance between the subsidiary and the parent, as this is known to affect their overall relationship and their individual performance. We included in the standard specification different measures of distance, like geographical distance, common border, common language and past and current colony history. These were included both jointly and separately. Each individual distance metric was not statistically significant on re-shoring, and all of the key variables were robust to their inclusion, but some of the interactions between the explanatory variables, the Crisis dummy and distance offer some interesting insights, as discussed above. The inclusion of credit constraint variables sought to establish whether better access to finance at the host relative to the parent country might reduce

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[13] This variable is available from WEF The Global Competitiveness Report

[14] From CEPII's distance measures like geographical distance, comon language, colony and common borders

the likelihood of re-shoring. Following Manova (2015), we can argue that the deteriorating access of finance at the host country has two opposing effects on a MNE's decision to re-shore. First, when credit constraints begin to bind in the host, fewer local firms will enter and some domestic firms will exit, hence increasing the incentives for the MNE to keep its activities there in order to capitalise the higher market share. But at the same time the declining availability of funds from the local market (or their higher cost) will increase the likelihood of the parent firm to scale down its operations abroad. In order, to capture these possible channels that might affect re-shoring we have used 2 measures of credit constraints, leverage and liquidity. We have estimated several specifications that had a) a relative measure of credit constrains, i.e. the ratio of credit constraint for the subsidiary to parent's credit constraint, b) credit constraint measures at the parent level and c) at the subsidiary level. All results indicate that our main results remain intact and that credit constraints do no statistically affect the re-shoring decision[15].

Next, we employed various interactions between variables to explore whether the main baseline variables became more or less important over time. We therefore inter-acted our continuous variables such as Foreign Exchange, Hiring and Firing Practices and Property Rights with both time dummies, and a time trend, as well as with the crisis dummy. None of these alternative specifications yielded additional significant coefficients, or changed the inference regarding the significance of the variables presented in table 5. We also estimated a specification with an embeddedness variable in order to evaluate whether we erroneously picked-up some statistically significant effects on re-shoring for subsidiaries that have only recently been established compared with subsidiaries that have a longer history in host countries. For example, subsidiaries that are recently established may not as well embedded in

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[15] Perhaps an explanation for this could be the fact that the number of observations drop significantly, due to limited information on subsidiaries' credit constraints.

the host country and may lack a stable relationship with their parent firm, which in relation to their older counterparts can be reflected in higher likelihood rates of re-shoring. Our econometric analysis indicates that all of these variables are not statistically significant, and our results and hypothesis testing are robust to their inclusion; hence our main results remain intact.

Finally, we estimated the model including subsidiary country fixed effects instead of parent country fixed effects, resulting in no noticeable changes either in magnitude or statistical significance[16]. All the various robustness checks outlined above, suggest that our main results remain unchanged and indicate that our specification and estimates are robust.[17]

7. Discussion and Conclusion

The aim of this paper is to provide evidence of the factors that influence an MNE's decision to re-shore, focussing particularly on the factors that determine the timing of re-shoring. Internalisation theory places the focus on the fundamental interactions between place and space, emphasising the combinations of firm specific advantage and location specific advantage that drive location decisions. Internalisation theory would predict that firms go abroad when they seek to retain ownership of an activity and for reasons of either market-, resource-, efficiency- or technology-seeking, choose to locate away from the home country.

While the broad lessons of internalisation theory can be applied to this phenomenon, our results also show that (as the call notes) one must consider the implications in terms of our theoretical models of the boundaries of the firm. We offer an extension to this, emphasising the importance of learning in terms of re-shoring. After illustrating that a model motivated by

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[16] We also experimented with clustering the standard errors at the subsidiary level in an attempt to improve efficiency in the estimation, but again the estimates and levels of significance did not change.
[17] The estimates are indeed very robust, since changing the integration points does not alter the estimates given that the correlated random effects probit coefficients come from non-closed form solutions (i.e. approximation of integrals).

internalisation theory explains re-shoring decisions, our results also highlight a number of interesting findings. Firstly, we provide evidence that re-shoring has indeed become more prevalent since the onset of the crisis for European MNEs, which has a number of firm as well as policy implications which we discuss below.

Second, one should not under-estimate the importance of learning and experience in re-shoring. The fact that we find a good deal of persistence in the re-shoring decisions of firms, suggests that there was serial excessive offshoring by firms that is now being corrected. On the one hand, this illustrates that re-shoring is subject to the same deliberations concerning risk as offshoring, where firms test the robustness of local value chains before embarking on expansion on a wider scale. On the other hand, it highlights the role that host country conditions can play in determining the boundaries of firms in terms of location decisions.

Third, our results also suggest that firms are using re-shoring as part of their branding or CSR activities within their home country. When the financial crisis hit, many firms took the opportunity to re-shore, driven by real wage deflation in the West coupled with record oil prices. This was publicised in the name of patriotism, giving the impression that MNEs were putting local jobs above mere profits. Isolating the effects driven by cost drivers versus the CSR / corporate branding drivers of re-shoring suggests the need for this line of research to be further developed. Equally, oil prices are approximately a third of the peak they reached in 2008, which may be expected to impact re-shoring in the future.

Our findings offer scope for policy makers to encourage re-shoring. Where learning is required, there is a role for inward investment promotion agencies to facilitate re-shoring through networking with local suppliers, and seeking to develop local capacity through support for small firms. In developed countries, many such supply chains have been "hollowed out" in the last thirty years, so there is a need for policy interventions to rebuild them, including investing in skills. This inference is supported by our results concerning, for example, relative

labour costs, where access to appropriately priced skills is an important driver of re-shoring. This suggests that policy makers need to view re-shoring in the same way they view inward investment; that establishing the value proposition for a region is just as important for re-attracting domestic investment, as it is for attracting inward FDI.

We also suggest a way forward in the face of "populist" policies. UK firms, for example, are facing potentially conflicting demands in the face of Brexit. On the one hand, to build their supply chains locally, in the face of both tariff and non-tariff barriers between the UK and the current European supply chains. On the other hand, to do this while facing greater skill shortages as a result of greater UK restrictions on immigration. From Figure 5 it is clear that UK firms operating in Wearing Apparel (NACE 2 code 14) and Manufacture of Leather & Related Products (15) have the highest probability of engaging in reshoring activities, since the marginal effect of a 1% increase in relative wages (subsidiary wages over parent wages) leads to a 10%-13% higher probability of reshoring. In contrast, the UK industries with the lowest probability of experiencing reshoring after an increase in relative wages are Manufacture of Beverages (11), Manufacture of Tobacco Products (12) and Manufacture of Coke and Refined Petroleum Products (19) with a probability close to zero[18]. Taken together, our results also shed some light on the likely success of president Trump's "America first" policy regarding re-shoring. Our results suggest that while there is evidence of some low tech reshoring, this is typically is not linked to the types of sectors such as automotive that the US president's policy wishes to promote.

Furthermore, although distance is not by itself a statistical significant factor affecting re-shoring, when interacted with each relative subsidiary-parent specific variable provides some interesting insights. In particular, from Figure 1 it is evident that relative wages have a

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[18] Note also that the subsidiary-parent relative wage marginal effect for all these 3 industries is not statistical significant.

positive and statistically significant effect on the likelihood of re-shoring as long as the distance between subsidiary and parent is less than 2,000 kilometres. The implication for US re-shoring from Mexico is that for most states in the South, West and Central parts of US could potentially experience re-shoring as long as Mexican wages increase relative to US ones. The underlying assumption here is that the Mexican manufacturing base is located across the US-Mexican borders. Finally, this implies that a 2,000 kilometres radius from the US-Mexican border excludes big parts of Midwest States and the whole of East Coast States. Hence, many Trump voters in the States just mentioned will probably not be able to enjoy any potential benefits from re-shoring. Thus, making the already quite difficult task of the Trump administration to deliver on his economic promises even tougher

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Figure 1: Average Marginal Effects of relative wages by distance and crisis dummy
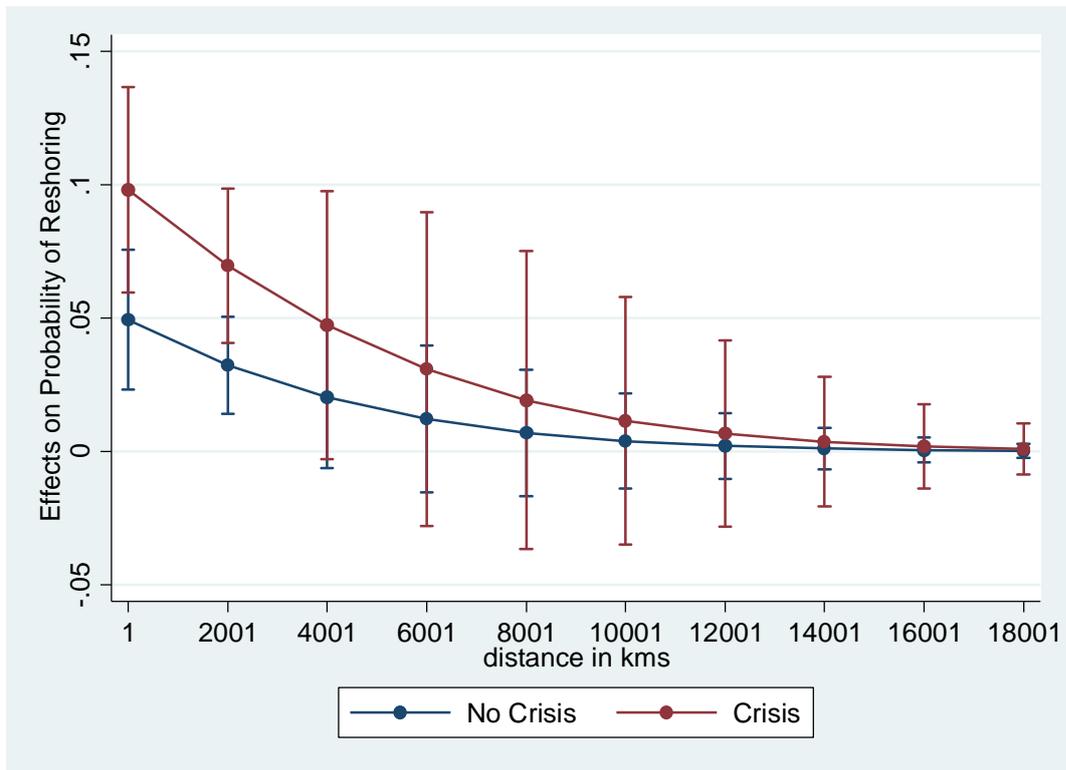

**Figure 2: Average Marginal Effects of crisis dummy by distance**
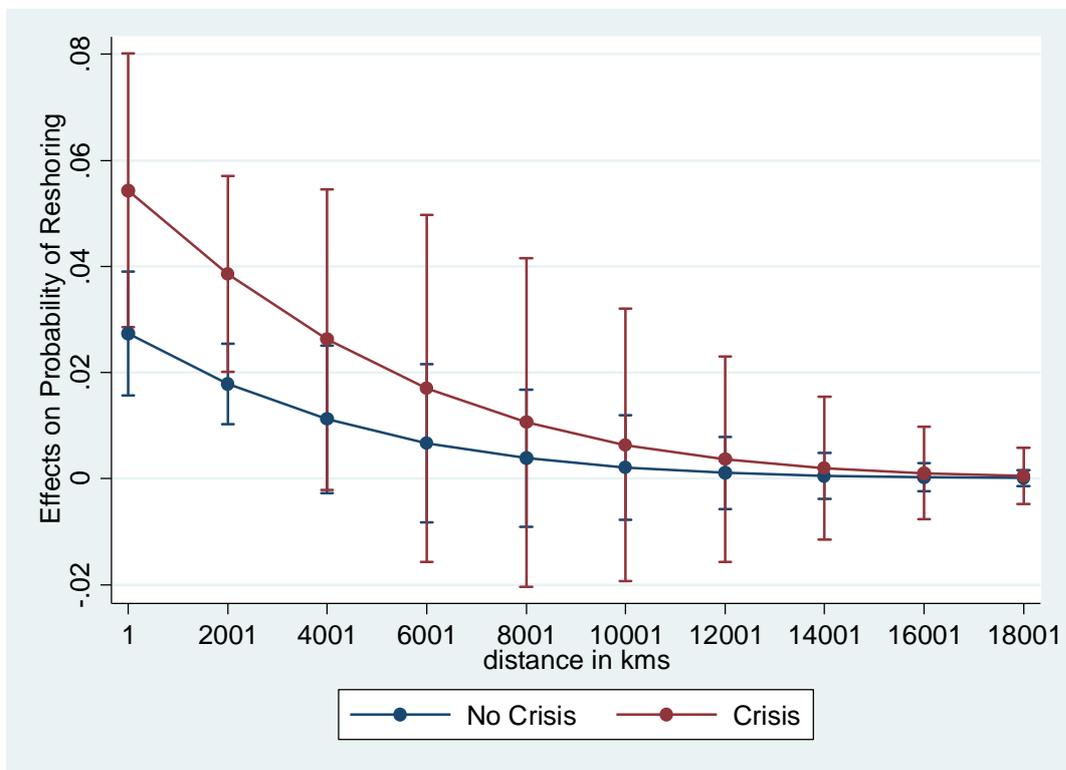
Figure 3: Average Marginal Effects of relative wage by parent country and crisis dummy
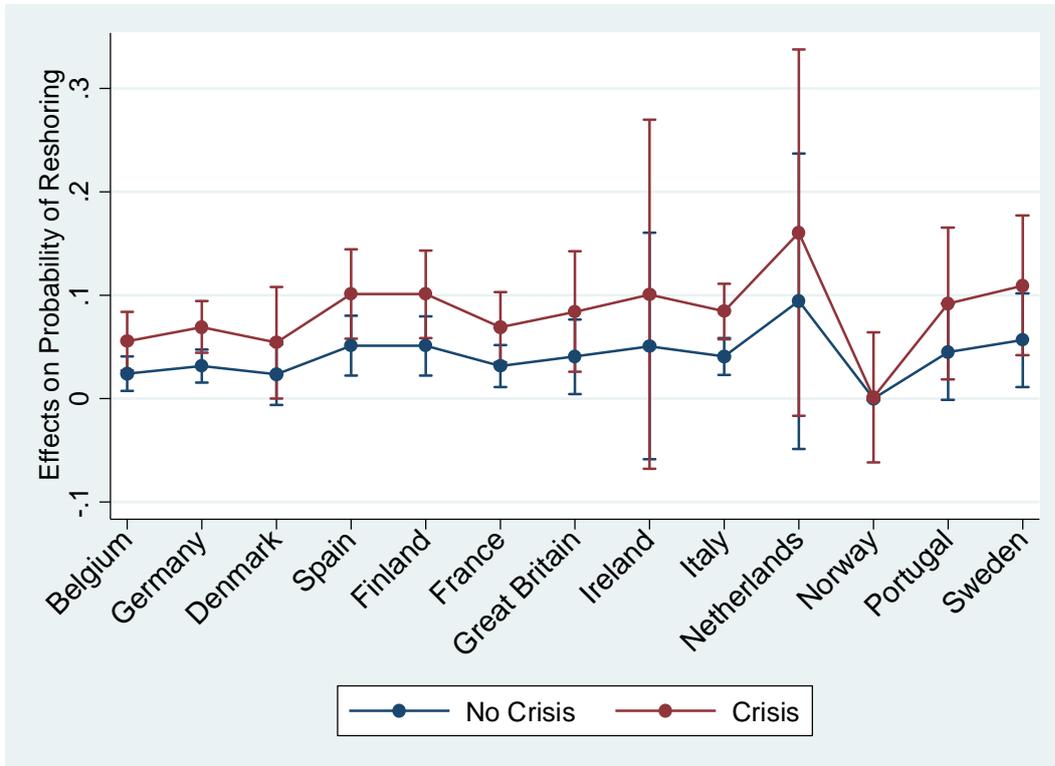
Figure 3: Average Marginal Effects of hiring and firing practices by parent country and crisis dummy
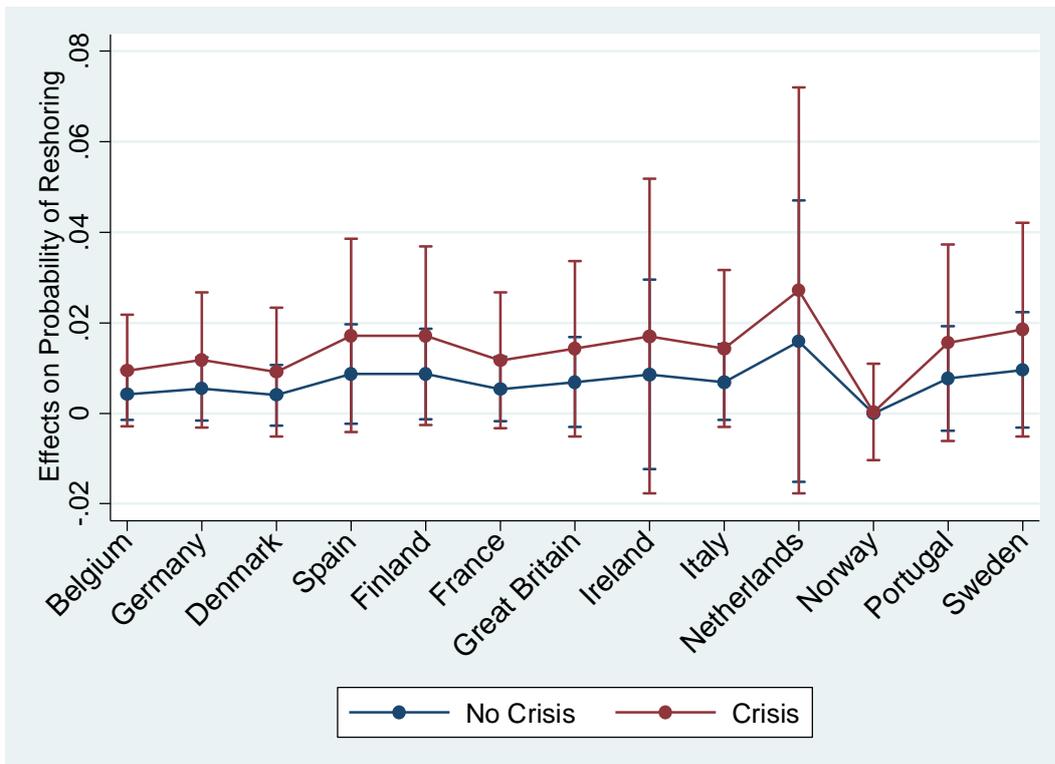
Figure 5: Average Marginal Effects of relative wages for UK parents by NACE2 classification[*]
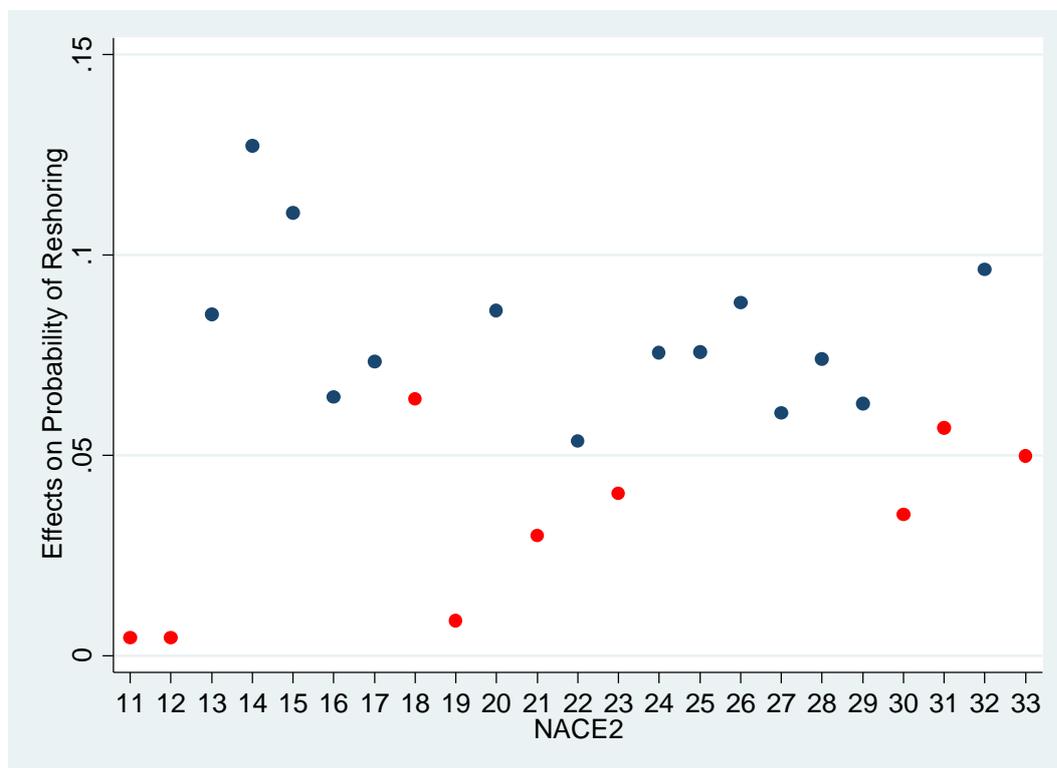
[*]Note that the red dots indicate statistically insignificant Marginal Effects, while the blue ones statistically significant Marginal Effects at the 5% level.

Table 1: Distribution of Re-shoring across OECD countries (2006-2013)

	Number of firms re-shoring	Number of Firms not re-shoring	Total number of firms
Austria	39	214	253
Belgium	25	181	206
Germany	131	674	805
Denmark	15	143	158
Spain	29	331	360
Finland	40	170	210
France	21	281	302
Great Britain	10	120	130
Ireland	1	13	14
Italy	139	717	856
Netherlands	6	54	60
Norway	0	88	88
Portugal	5	63	68
Sweden	29	144	173
Total	490	3,193	3,683

Source: Authors calculations using Orbis.

Table 2: Distribution of Re-shoring Parents across NACE 2 digit industries

NACE 2 digit industry	Number of firms re-shoring	Number of Firms not re-shoring	Total
10 Food products	27	129	156
11 Beverages	2	24	26
12 Tobacco products	0	4	4
13 Textiles	17	93	110
14 Wearing apparel	19	79	98
15 Leather and related products	12	52	64
16 Wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	13	71	84
17 Paper and paper products	17	56	73
18 Printing and reproduction of recorded media	9	41	50
19 Coke and refined petroleum products	0	3	3
20 Chemicals and chemical products	24	205	229
21 Basic pharmaceutical products and pharmaceutical preparations	6	54	60
22 Rubber and plastic products	40	266	306
23 Other non-metallic mineral products	14	124	138
24 Basic metals	21	104	125
25 Fabricated metal products, except machinery and equipment	83	448	531
26 Computer, electronic and optical products	23	210	233
27 Electrical equipment	50	248	298
28 Machinery and equipment n.e.c.	60	536	596
29 Motor vehicles, trailers and semi-trailers	21	178	199
30 Other transport equipment	4	58	62
31 Furniture	10	74	84
32 Other manufacturing	12	87	99
33 Repair and installation of machinery and equipment	6	49	55
Total	490	3,193	3,683

Source: Authors calculations using Orbis.

Table 3: Distribution of Re-shoring subsidiaries across continents

	Number of firms re-shoring	Number of Firms not re-shoring	Total
Africa	2	180	182
South and Central America	5	753	758
Asia	39	921	960
Central and Eastern Europe	480	3,554	4,034
Total	526	5,408	5,934

Source: Authors calculations using Orbis.

Table 4: Descriptive statistics

Variable	Total			Re-shoring firms			Non Re-shoring firms		
	Mean	S.D	Obs.	Mean	S.D	Obs.	Mean	S.D	Obs.
Relative wage	0.262	0.15	6,578	0.264	0.15	401	0.262	0.15	6,177
Relative turnover	0.163	0.18	6,578	0.146	0.15	401	0.166	0.18	6,177
Relative capital	0.145	0.16	6,578	0.140	0.15	401	0.145	0.16	6,177
Nominal Exchange Rate	25.44	56.51	6,578	26.41	61.33	401	25.37	56.19	6,177
Hiring & firing	3.656	0.45	6,578	3.719	0.43	401	3.652	0.45	6,177
Property Rights	4.266	0.52	6,578	4.224	0.52	401	4.269	0.51	6,177
Crisis dummy	0.70	0.45	6,578	0.84	0.36	401	0.69	0.46	6,177

Source: Authors calculations using Orbis.

Table 5: Correlated Random Effects Probit Results
(Coefficients shown as Marginal Effects)

	(1)	(2)	(3)	(4)
Re-shoring $_{t-1}$	0.080***	0.080***	0.077***	0.074***
	(0.027)	(0.027)	(0.026)	(0.026)
Log Relative Wages	0.065***	0.065***	0.069***	0.068***
	(0.010)	(0.010)	(0.010)	(0.010)
Log Relative Turnover	-0.020***	-0.020***	-0.019***	-0.019***
	(0.006)	(0.006)	(0.005)	(0.005)
Log Relative Capital	-0.020***	-0.020***	-0.020**	-0.020**
	(0.008)	(0.008)	(0.008)	(0.008)
Foreign Exchange	1.92e-05	2.02e-05	2.53e-05	3.51e-05
	(4.96e-05)	(5.00e-05)	(5.06e-05)	(5.11e-05)
Hiring and Firing Practices	0.011	0.011	0.013*	0.011
	(0.007)	(0.007)	(0.007)	(0.007)
Property Rights		-9.04e-04		-0.008
		(0.006)		(0.007)
Distance			-1e-05	-1.3e-05
			(8.77e-06)	(9.24e-06)
Crisis Period Dummy	0.038***	0.038***	0.038***	0.035***
	(0.006)	(0.007)	(0.006)	(.007)
Observed; Predicted Prob	6.04% ; 4.54%	5.98% ; 4.53%	6.07%; 4.56%	6.15%; 4.55%
Wald chi2	242.30	242.08	245.16	244.42
Prob > chi2	0.000	0.000	0.000	0.000
Pseudo R2				
Log likelihood	-1332.4394	-1332.4297	-1305.1636	-1304.4256
Means for time varying variables	Yes	Yes	Yes	Yes
Parent Industry dummies	Yes	Yes	Yes	Yes
Parent Country dummies	Yes	Yes	Yes	Yes
Control for Initial Conditions Problem	Yes	Yes	Yes	Yes
Observations	6,636	6,636	6,442	6,442

Notes: Coefficients are shown as marginal effects.
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix

1. Countries in the sample where parent firms have their head quarters: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden and United Kingdom. Originally, we had all 23 founding OECD members in the sample. The results were quantitatively and qualitatively very similar, but there were very few observations for these 9 additional economies and we decided to exclude them from the sample.

2. Countries in the sample where subsidiary firms are located: Afghanistan, Albania, Algeria, Angola, Argentina, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Cabo Verde, Chile, China, Colombia, Congo(Brazzaville), Cote d'Ivoire, Croatia, Cuba, Czech Republic, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Ghana, Honduras, Hungary, India, Indonesia, Kazakhstan, Kenya, Latvia, Lithuania, Macedonia, Madagascar, Mexico, Moldova, Montenegro, Morocco, Nicaragua, Nigeria, Oman, Pakistan, Peru, Philippines, Poland, Qatar, Romania, Russian Federation, Saudi Arabia, Senegal, Serbia, Slovakia, Slovenia, South Africa, Sri Lanka, Tanzania, Thailand, Trinidad and Tobago, Turkey, Ukraine, United Arab Emirates, Uruguay, Venezuela and Vietnam.

	Location of Re-shored Subsidiaries	Location of Subsidiaries not Re-shored	Total Number of Subsidiaries
Afghanistan	0	1	1
Albania	0	6	6
Algeria	0	25	25
Angola	0	5	5
Argentina	0	121	121
Bolivia	0	2	2
Bosnia and Herzegovina	2	21	23
Botswana	0	1	1
Brazil	5	405	410
Bulgaria	10	55	65
Cape Verde	0	3	3
Chile	0	15	15
China	32	317	349
Colombia	0	34	34
Congo	0	1	1
Croatia	9	64	73
Cuba	0	2	2
Czech Republic	76	587	663
Cote d'Ivoire	0	1	1
Dominican Republic	0	3	3
Ecuador	0	3	3
Egypt	0	8	8
El Salvador	0	2	2
Estonia	39	146	185

Ethiopia	0	2	2
Ghana	0	2	2
Honduras	0	1	1
Hungary	51	220	271
India	7	382	389
Indonesia	0	7	7
Kazakhstan	0	1	1
Kenya	0	2	2
Latvia	12	62	74
Lithuania	16	69	85
Macedonia	0	3	3
Madagascar	0	1	1
Mexico	0	134	134
Montenegro	0	2	2
Morocco	1	64	65
Nicaragua	0	1	1
Nigeria	0	3	3
Oman	0	2	2
Pakistan	0	1	1
Peru	0	23	23
Philippines	0	13	13
Poland	57	842	899
Qatar	0	3	3
Republic of Moldova	1	5	6
Romania	115	486	601
Russian Federation	29	564	593
Saudi Arabia	0	8	8
Senegal	1	0	1
Serbia	8	55	63
Slovakia	40	256	296
Slovenia	5	63	68
South Africa	0	61	61
Sri Lanka	0	3	3
Thailand	0	2	2
Trinidad and Tobago	0	2	2
Turkey	0	175	175
Ukraine	10	48	58
United Arab Emirates	0	4	4
United Republic of Tanzania	0	1	1
Uruguay	0	1	1
Venezuela	0	4	4
Vietnam	0	2	2