Learning the ropes? Executive experience and location choices of multinational firms

Baptiste Souillard*[1]

[1] *ECARES, SBS-EM, Université Libre de Bruxelles*

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Abstract: What makes firms invest in foreign countries? In this paper, I show that beyond country- and firm-specific characteristics, experience of executives is crucial to understand multinational enterprises' location choices. Using a dataset on executives and subsidiaries of US-listed firms, I find that hiring an executive having previously worked for a company that had at least one subsidiary in a given country increases the average probability to own subsidiaries in this country by 14 percent after three years. Moreover, I observe a similar effect at the intensive margin and a wage premium for experience in managing multinational activities. A causal interpretation of the results is possible by using movements due to unexpected events as sources of exogenous shocks (e.g., death of incumbent executives) and by exploiting the conferral of the Permanent Normal Trade Relations status on China as a quasi-natural experiment. Altogether, the findings suggest that executives develop country-specific knowledge, a valuable asset in the labor market that helps companies intensify their presence abroad. Because they notably hold for tax havens, they also shed light on the mechanisms whereby profit shifting activities spread across multinational corporations and imply that tracking executives could help public authorities detect aggressive tax planning.

Keywords: Foreign direct investments, multinational firms, subsidiaries, executives, experience, mobility.

JEL codes: F16, F23, H26, J62, M12.

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1 Introduction

What makes enterprises invest in foreign countries ? Attracting foreign direct investments (FDI) has long been a top priority for governments. They compete with each other and try to encourage FDI inflows by virtue of their effect on technology, employment, development, and growth. For firms, reaching new markets is a difficult process, and executives probably play a key role in this regard since they impulse their global strategy. Anecdotal evidence clearly suggests that they contribute to companies' international activities.[1] In this paper, I provide *systematic* evidence that they help their firm develop internationally. I isolate the effect of one particular characteristic: experience in managing foreign operations. I demonstrate that executives acquire country-specific knowledge and use it to help their current company broaden its network of subsidiaries in the countries where the enterprises they previously worked for had subsidiaries themselves.

First, I construct a large and unique dataset containing information on executives and subsidiaries of firms listed on the Standard & Poor's (S&P) 1500 between 1993 and 2014. Then, I adopt a difference-in-difference methodology to quantify the effect of recruiting an executive having experience with a given country on the probability to have subsidiaries in this country. The analysis is thus performed at the firm $\times$ country $\times$ year level. Thanks to this fine level of disaggregation, the effect is estimated while controlling for many confounding factors through a battery of fixed effects. Firm $\times$ year

1. In 2015, Black Box, a corporation specialized in communications products and listed on the NASDAQ index, nominated two new executives "*to drive sales growth for the key Europe Middle East and Africa (EMEA) region and Japanese markets*". Hans-Peter Kuhnert was appointed Vice President of Sales for the Europe Middle East and Africa region, and Koichiro Fukumoto was appointed Country Manager for Japan. In a press release distributed by Business Wire, the firm states: "*Hans-Peter and Koichiro are important appointments for Black Box as they bring extensive experience and add the necessary leadership that will help us to accelerate sales growth. [...] Mr. Kuhnert joins Black Box from Rohde & Schwarz where he helped to implement a global indirect sales channel structure. At Tektronix he held the position of vice president of sales and operations for the instrument and solutions business in the EMEA region. He also held various senior management positions with technology leaders Hewlett-Packard and Agilent. Prior to joining Black Box, Mr. Fukumoto was President and CEO of a Japanese distributor of electronic test and measurement products from global suppliers. He joined the company as a sales engineer and held several senior leadership positions and a board position for over 20 years prior to his tenure as President and CEO*". More details here: `https://www.businesswire.com/news/home/20150303005074/en/Black-Box-Announces-New-Executive-Appointments-International`.

fixed effects control for all time-invariant and time-variant firm-level determinants of FDI such as productivity and size. Importantly, they also absorb fixed and year-specific attributes of top managers such as nationality, age, and education. They are coupled with country $\times$ year and firm $\times$ country fixed effects. The former capture labor costs, market size, and all other country-specific features influencing firms' decisions to open subsidiaries. For their part, firm $\times$ country fixed effects incorporate all firm $\times$ country factors potentially driving firms' location choices as well as country-specific attributes of managers staying in the same firm. All in all, these fixed effects greatly mitigate concerns about omitted variables: they allow me to pick up the effect of FDI-related experience gained by top managers and not the effect of unobserved characteristics of executives not attributable to former job experience.

The baseline results indicate that hiring an executive having worked for a firm with subsidiaries in a given country at the time augments the average probability to be present in this country by 1.5 percentage points, i.e., 7 percent. To the extent that the reverse is not true – i.e., the departure of experienced executives does not incite firms to exit the market –, it appears that executive experience eases FDI via a reduction of the (sunk) cost of entry, whose existence is acknowledged in the literature (Helpman, Melitz, and Yeaple, 2004; Kimura and Kiyota, 2006; Greenaway and Kneller, 2007). The positive effect doubles three years after the appointment and is corroborated by various robustness tests. I show for instance that changing the set of foreign countries yields similar results. For computational reasons, the benchmark results are obtained using a restricted set of 30 foreign countries found to be the top locations of S&P 1500 firms' subsidiaries. I repeat the analysis by omitting one country at a time and by drawing randomly 30 foreign countries to ensure that the findings are not driven by one or some countries. Next, I deal with econometric issues. An important point recently raised in the econometrics literature pertains to the fact that linear regressions with high dimensional effects estimate weighted sums of the average treatment effects (ATE). Some of the weights can be negative, and it might be problematic if the ATE are heterogeneous across groups or periods. The coefficient of interest could be positive even though all ATE are negative. I follow the guidelines of de Chaisemartin and D'Haultfœuille (2020), who discuss this for models with two-way fixed effects. After removing the firm $\times$ country fixed effects to boil down to a two-way fixed effects model, I find a low share of negative weights (14 percent), meaning that treatment effect heterogeneity should not constitute a major threat to the validity of the findings. I depart from the linear probability model too, and re-estimate the main equation using logit and probit. The literature is not clear about the model that should be used in the case of binary outcomes (Horrace and Oaxaca, 2006; Angrist and Pischke, 2009; Battey, Cox, and Jackson, 2019; Gomila, 2020). The simplicity and easy interpretability of linear probability models sometimes come at a cost but estimating logit and probit models with high dimensional fixed effects is not trivial. The inclusion of fixed effects in a binary choice setting induces the incidental parameter problem. Groups of observations for which the dependent variable is fixed throughout the period must be dropped to maximize the likelihood and the coefficients are biased. I rely on the econometrics literature to remedy this, and more specifically Hinz, Stammann, and Wanner (2020). They propose a correction of this bias for a class of models with three-way fixed effects within which mine perfectly falls.

One limitation is that the venue of experienced managers may be correlated with unobserved investments and more generally firm $\times$ country $\times$ year shocks. I tackle this endogeneity concern in four ways. First, I carry out a placebo test to assure (i) that there are no pre-existing trends in firms' presence overseas and (ii) that the treatment is unlikely to be correlated with past firm $\times$ country $\times$ year shocks. Second, I proceed with instrumental variables. The number of experienced managers three years prior instruments the current number of experienced managers, in the same spirit of Mion and Opromolla (2014) and Mion, Opromolla, and Sforza (2019). The underlying assumption is that hirings have no effect on the network of subsidiaries after three years. The two-stage least squares results align with the rest, thereby implying that the plausibility that the treatment serves as a proxy for current unobservable shocks is limited. In another approach, I consult official reports and use Factiva to go through newspapers, newswires, and press releases. The objective is to fully grasp the motives for executives' movements. Therefore, I know whether some of the movements observed throughout the period are precipitated by abrupt resignations, retirements, deaths, sudden layoffs, or resignations and layoffs subsequent to legal investigations. I treat these movements as an exogenous source of variation in the number of experienced managers. I claim that changes in the stock of experienced executives are less likely to be correlated with unobserved shocks when they are triggered by movements initiated by executives or other unforeseen circumstances. Again, the new results concur in terms of economic and statistical significance. Finally, I exploit the US conferral of the Permanent Normal Trade Relations status on China in October 2000 as a quasi-natural experiment. The literature has shown that policy uncertainty dampens trade, corporate investment, and FDI, and that this event substantially reduced trade policy uncertainty between the US and China (Gulen and Ion, 2016; Pierce and Schott, 2016; Handley and Limão, 2017; Choi, Furceri, and Yoon, 2020; Wu, Zhang, Wu, and Kong, 2020). In addition, the granting could not be anticipated by firms; trade policy uncertainty mostly depended on the so-called non-normal-trade-relations tariff rates, set by the Smoot-Hawley Tariff Act in 1930, so the shock differentially exposed sectors and the treatment is plausibly exogenous; and the evolution of S&P 1500 firms' FDI in China prior to 2001 is unrelated to the treatment. We expect that the firms that were the most exposed to trade policy uncertainty before the conferral invested relatively more in China in response to the shock. If we believe that experience of managers truly affect companies' presence abroad, we also expect this reaction to be stronger for firms having executives experienced in managing operations with China. I validate both predictions using a subsample of enterprises in which the number of managers familiar with China stayed constant between 1995 and 2005. Altogether, these sensitivity tests confirm that the effect is causal. The fact that hiring an experienced manager and investing overseas could be joint and simultaneous decisions should not compromise the findings.

Five exercises supplement the benchmark results. In the first exercise, I explore whether knowledge of top managers has to be necessarily country-specific or if, on the contrary, experience in managing operations with any foreign country can help firms reach new markets. The results support the first proposition. Put otherwise, executives coming from corporations owning subsidiaries in Canada do not significantly help their new firm have subsidiaries say in France or Belgium. In the second exercise, I allow for heterogeneous effects. Because chief executive officers (CEO), chief financial officers (CFO), chief marketing officers (CMO), and chief operating officers (COO) are the highest-level executives, I allow for the possibility that their experience has a bigger impact. Evidence backs this intuition. Experience of these top executives appears as an important factor of FDI but that of the other executives, on the opposite, has no or little incidence. In the third exercise, I examine whether the pattern persists at the intensive margin. Interestingly, I find a similar effect on the number of subsidiaries abroad, conditional on having at least one subsidiary in the country. Hence, experienced executives help companies penetrate new markets and intensify their presence in the countries where they are already implanted. In the fourth exercise, I investigate whether experienced executives receive higher compensation all else equal and I find evidence pointing in this direction. FDI-related experience commands a 11.2 percent wage premium. Firms consequently compete for this rare skill in the labor market. They invest in experienced executives as they expect higher returns in some foreign countries. In the final exercise, I focus on a very particular set of countries: tax havens. The effect remains positive with two of the most frequently used classifications of tax havens (Hines and Rice, 1994; Dyreng and Lindsey, 2009) and with a restricted set of small and remote tax havens for which profit shifting is certainly the only motive for FDI (e.g., Bahamas and the British Virgin Islands). It means that executives tend to replicate the aggressive tax planning strategies of their former firms and that profit shifting practices spread across multinational corporations through executive mobility. From a policy perspective, it implies that inspecting movements of top executives could be useful to predict companies' future use of tax havens and that public authorities could devote more resources to audit firms hiring top executives coming from enterprises involved with tax havens.

Related literature and contribution This paper resonates with four strands of the literature. First, a line of research has examined the determinants of FDI. The relevance of labor costs, market access, tariffs, institutions, political risk, tax rates, firm productivity, and firm size, to mention only a few, has largely been established (Antràs and Yeaple, 2014; Blonigen and Piger, 2014). Nevertheless, most of the determinants hitherto uncovered are country- and firm-specific and firms are often treated as black-box entities. This paper adds to this literature by looking inside companies and analyzing the role of their executives. My findings imply that beyond country- and firm-specific characteristics, those of top executives are essential to shaping business operations and the network of multinational corporations. At the same time, they unveil a new mechanism whereby FDI-related knowledge disseminates across companies (Balsvik, 2011; Poole, 2013; Demena and van Bergeijk, 2017).

Second, another stream of the literature in economics has shown that management practices are crucial to firm performance in international markets. For example, some papers find evidence of an export-enhancing effect of ethnic diversity and immigrants (Parrotta, Pozzoli, and Sala, 2016; Marchal and Nedoncelle, 2019).[2] Mion and Opromolla (2014), Choquette and Meinen (2015), Sala and Yalcin (2015), Meinen, Parrotta, Sala, and Yalcin (2018), Mion et al. (2019), and Lööf and Viklund-Ros (2020) reveal that managers/directors gain experience in exporting activities and spur their current enterprise's exports to the countries they are familiar with.[3] Using firm-to-firm export data, Lenoir and Patault (2019) show that sales managers have buyer-specific knowledge and transmit it to companies when they are recruited. My paper complements the aforementioned articles by studying another dimension of firm performance in international markets, namely FDI. While several papers in the international business and management literature analyze the link between CEO experience and FDI entry (Herrmann and Datta, 2006; Cui, Li, Meyer, and Li, 2015), mine leverages a larger database and sheds more light on the importance of executive experience. Among others, my results for instance indicate that only country-specific experience of C-level executives is pivotal.

Third, a literature has documented the determinants of executives' compensations (Gabaix and Landier, 2008; Graham, Li, and Qiu, 2012) and the existence of a wage gap between workers in multinational enterprises, exporting firms, and domestic firms referred to as the "multinational/exporter wage premium" (Heyman, Sjöholm, and Tingvall, 2007; Hijzen, Martins, Schank, and Upward, 2013; Helpman, Itskhoki, Muendler, and Redding, 2017; Schroeder, 2019). This paper might help better understand differences in compensations across executives and what lies behind this multinational wage gap, at least for top managers. It suggests that foreign experience matters and that the

2. See Moriconi, Peri, and Pozzoli (2020) for similar figures with firms' offshoring decisions.
3. See Bisztray, Koren, and Szeidl (2018) for similar figures with firm imports.

multinational wage premium may be inflated by the omission of one variable in the Mincer equations: FDI-related knowledge developed while working for multinational firms, which I find valuable in the labor market.

Last but not least, this paper expands the literature on the determinants of profit shifting activities. Only a few articles investigate how managers drive corporate tax dodging activities. In a seminal paper, Dyreng, Hanlon, and Maydew (2010) show that fixed characteristics of executives play a key role in corporate tax strategies, thereby revealing that it is not influenced solely by firms' characteristics *per se*. Other studies have then highlighted particular features of managers such as conservatism (Christensen, Dhaliwal, Boivie, and Graffin, 2015), foreign experience (Wen, Cui, and Ke, 2020), military experience (Law and Mills, 2017), narcissism (Olsen and Stekelberg, 2016), and origin (DeBacker, Heim, and Tran, 2015). Against this background, this paper emphasizes the effect of managers' experience with tax havens. At the same time, this paper contributes to the emerging literature analyzing how tax avoidance behaviors diffuse among firms. Papers have pointed out that such behaviors spill over via auditors (Frey, 2018; Lim, Shevlin, Wang, and Xu, 2018), banks (Gallemore, Gipper, and Maydew, 2019), board ties (Brown, 2011; Brown and Drake, 2014), strategic alliances (Muller and Weinrich, 2020), supply chains (Cen, Maydew, Zhang, and Zuo, 2017), and tax departments' workers mobility (Barrios and Gallemore, 2019). The present paper especially complements the work of Barrios and Gallemore (2019). They note that firms avoid taxes to a larger extent when they recruit employees from firms with relatively low cash effective tax rates. In this paper, I concentrate on one of the most aggressive forms of tax avoidance, profit shifting, and elaborate on how mobility of managers propagate tax avoidance practices across firms. Armed with a unique dataset, I disentangle time-variant and time-invariant characteristics of top managers and prove that these people bring their experience with tax havens.

The remainder of the paper is structured as follows. Section 2 introduces the data. Section 3 lays out the empirical strategy, discusses the challenges associated with it, and presents the main results. Section 4 provides more insights and section 5 briefly concludes.

2 Data

To conduct the analysis, I combine data from three distinct sources: Compustat North America, ExecuComp, and Exhibit 21 filings. On this basis, I build a unique dataset on S&P 1500 firms' executives and subsidiaries. This section describes each of these data sources and the final sample.

2.1 Data sources

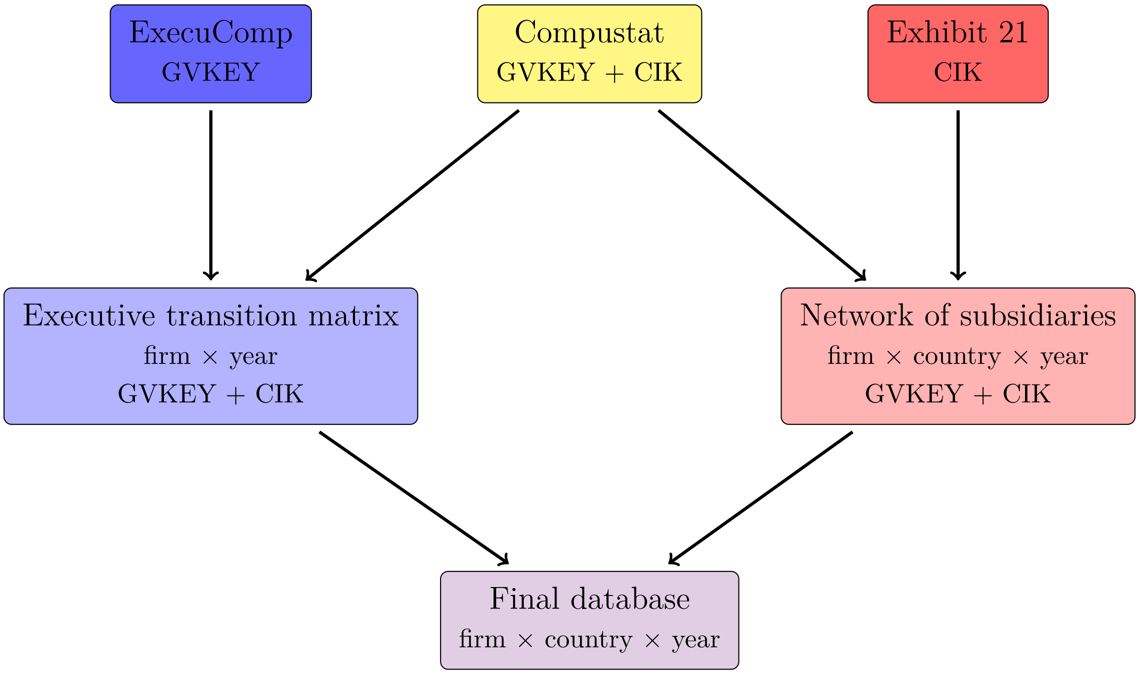
Compustat Compustat North America contains extensive information on balance sheets, income statements, and cash flows of publicly listed companies in North America since 1950. Although US-listed companies represent a small share of all companies operating in the country, they are the largest and contribute 30 percent to total employment and 40 percent to aggregate sales (Asker, Farre-Mensa, and Ljungqvist, 2014). The two Compustat variables retained for this study are the unique identifiers $GVKEY$ and CIK. These identifiers allow me to bridge the two other databases (see figure 1). Financial data are left aside because they will be fully accounted for with firm × year fixed effects, as we will see in the next section.

ExecuComp ExecuComp can be merged with Compustat using the $GVKEY$ identifier and informs on the title and compensation of executives working for firms listed on the S&P 1500, starting from 1992.[4] Given that these firms encompass approximately 90 percent of US market capitalization, I am able to track executives both over time and across the largest US-listed firms.

Exhibit 21 Companies listed on a US stock exchange are required by the Securities and Exchange Commission (SEC) to disclose each year their significant subsidiaries in Exhibit 21 of Form 10-K. A subsidiary is deemed significant if its assets exceed 10 percent of consolidated assets or if its income exceeds 10 percent of consolidated income.

4. More precisely, this database includes firms listed on the S&P 1500 but also companies that were once part of the index, firms removed from the index but that are still trading, and a few other firms. Data collection on the entire S&P 1500 began in 1994 but some firms are tracked as of 1992.

Figure 1 – Construction of the database



Moreover, any subsidiary should be disclosed if by combining all undisclosed subsidiaries into one affiliate, this affiliate exceeds 10 percent of assets or revenues.[5] Exhibit 21 reports are publicly available and firms have been filing these reports electronically since the 1990s. To illustrate this, figure 2 gives a snapshot of the list of the significant subsidiaries reported by the firm Johnson & Johnson in Exhibit 21 files in 2011. Dyreng and Lindsey (2009) compiled this information into a dataset that can conveniently be linked with Compustat thanks to the CIK identifier. In this paper, I exploit an updated version of their dataset covering the 1993-2014 period. I can therefore draw a clear picture of the worldwide network of subsidiaries of companies listed on the S&P 1500 and see how it evolves over time.

5. Note that firms are not obliged to uncover financial information about their subsidiaries. Also, although firms might have incentives to hide some subsidiaries, especially those located in tax havens, Dyreng, Hoopes, Langetieg, and Wilde (2020) show that the majority of disclosures are accurate. More details and discussions on Exhibit 21 disclosures can be found in Dyreng and Lindsey (2009) and Dyreng et al. (2020).

Figure 2 – List of significant subsidiaries of Johnson & Johnson in Exhibit 21 (2011, non-exhaustive)

Name of Subsidiary	Jurisdiction of Organization
U.S. Subsidiaries:	
Acclarent, Inc.	Delaware
ALZA Corporation	Delaware
Alza Development Corporation	California
Alza Land Management, Inc.	Delaware
Animas Corporation	Delaware
Biosense Webster, Inc.	California
Centocor Biologics, LLC	Pennsylvania
Centocor Research & Development, Inc.	Pennsylvania
CNA Development LLC	Delaware
Codman & Shurtleff, Inc.	New Jersey
Cordis Corporation	Florida
Cordis International Corporation	Delaware
Cordis LLC	Delaware
Cougar Biotechnology, Inc.	Delaware
Crescendo Pharmaceuticals Corporation	Delaware
Crucell Holdings Inc.	Delaware
DePuy, Inc.	Delaware
DePuy Mitek, Inc.	Massachusetts
DePuy Orthopaedics, Inc.	Indiana
International Subsidiaries:	
Apsis	France
Beijing Dabao Cosmetics Co., Ltd.	China
Berna Biotech Korea Corporation	Korea
Berna Rhein B.V.	Netherlands
Biosense Webster (Israel) Ltd.	Israel
Cilag Advanced Technologies GmbH	Switzerland
Cilag AG	Switzerland

Table 1 – Descriptive statistics

Firms	
Total number of firms	1,858
of which had at least one subsidiary in one of the 30 foreign countries	1,772
Average number of countries in which they had subsidiaries (conditional)	10.195
Average number of subsidiaries in foreign countries (conditional)	26.235
Executives	
Total number of executives moving across at least two firms	2,446
Average number of years spent in one firm	4.539

2.2 Sample

The final dataset comprises 1,858 S&P 1500 firms and 2,446 executives working for at least two of these firms between 1993 and 2014. Executives staying in the same firm over the time span are removed to reduce the dimension of the database. This omission is not prejudicial. Indeed, most of their characteristics potentially influencing firms' FDI will be absorbed by the firm $\times$ year and firm $\times$ country fixed effects. For an analogous reason, I keep only the top 30 subsidiaries' locations as they appear in Exhibit 21 filings over the period. These countries are Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, France, Germany, Hungary, India, Italy, Israel, Japan, Mexico, the Netherlands, New Zealand, Norway, Poland, Republic of Korea, Russia, South Africa, Spain, Sweden, Taiwan, Thailand, and the United Kingdom. I will demonstrate that the results are in no way driven by this selection. By the same token, subsidiaries potentially used for profit shifting purposes are eliminated but will be re-incorporated in section 4 where I focus on tax dodging.

Summary statistics are given in tables 1 and 2. Table 1 shows that almost all firms in the sample have at least one subsidiary at some point in one of these 30 countries. On average, they have 26 subsidiaries spread across 10 countries. Table 2 ranks the 30 foreign countries according to their attractiveness. The attractiveness of country c is calculated as the share of corporations disclosing at least one significant subsidiary in country c between 1993 and 2014. Unsurprisingly, Canada is the top destination selected by these companies, with 69 percent of them reporting at some point at least one subsidiary in this country. Canada is followed by the United Kingdom (68 percent), the Netherlands (53 percent), Germany (50 percent), France (49 percent), and Mexico (48 percent).

TABLE 2 – Attractiveness of the 30 foreign countries

Country	Attractiveness
Canada	68.999
United Kingdom	68.192
Netherlands	53.229
Germany	50.431
France	48.661
Mexico	48.332
Australia	46.878
China	44.133
Japan	42.842
Brazil	38.213
Italy	37.944
India	35.953
Spain	35.630
Belgium	29.279
Republic of Korea	27.503
Sweden	27.018
Argentina	24.704
Austria	21.905
Denmark	21.529
Poland	21.098
Taiwan	20.542
New Zealand	20.183
Thailand	19.860
South Africa	19.699
Chile	18.891
Norway	17.560
Czech Republic	16.846
Hungary	16.577
Russia	16.362
Israel	13.402

Notes. This table reports the attractiveness index of each of the foreign 30 countries. See section 2 for more details.

3 Executive experience and subsidiaries abroad: main results

This section quantifies the effect of executive experience on the presence of S&P 1500 companies abroad. First, I outline the empirical strategy and the baseline results. Next, I gauge and discuss their robustness.

3.1 Identification strategy and main results

I assess the role of executive experience in managing foreign operations on firm FDI by regressing equation (1):

$$FDI_{i,c,t} = \alpha TREAT_{i,c,t} + \mu_{i,t} + \upsilon_{c,t} + \gamma_{i,c} + \epsilon_{i,c,t} \quad (1)$$

$FDI_{i,c,t}$ is a dummy variable equal to one if firm i has at least one subsidiary in country c and year t. $TREAT_{i,c,t}$ is a count variable equal to the number of executives in firm i and year t who have previously worked for a firm with at least one subsidiary in country c at the time. α is the coefficient of interest. It translates the effect of the appointment of an executive experienced with country c on the firm's presence in this country (at the extensive margin).

We need mobility of executives to estimate α and exogenous variations of $TREAT_{i,c,t}$ to establish causality. I believe that the wide array of fixed effects, composed of $\mu_{i,t}$, $\upsilon_{c,t}$, and $\gamma_{i,c}$, mitigates most of endogeneity issues for two reasons. First, it captures a large range of confounding factors. By definition, the firm $\times$ year fixed effects $\mu_{i,t}$ take into account time-variant and time-invariant firm-specific determinants of FDI (e.g., firm productivity and size). On the same note, the country $\times$ year fixed effects $\upsilon_{c,t}$ incorporate time-variant and time-invariant country-specific features influencing enterprises' decisions to open foreign subsidiaries (e.g., labor costs and market size), and the $\gamma_{i,c}$ include firm $\times$ country unobserved characteristics leading companies to invest in country c. By construction, these fixed effects further control for fixed and year-specific

Table 3 – Baseline results

	$FDI_{i,c,t}$
$TREAT_{i,c,t}$	0.015^a
	(0.003)
Average probability	0.229
Firm × year FEs	Yes
Country × year FEs	Yes
Firm × country FEs	Yes
R^2	0.785
Nb. of obs.	478,500

Notes. This table reports regression results of equation (1). The period is 1993-2014 and the results are obtained with ordinary least squares. Standard errors, in parentheses, are clustered at the firm × year level. ${}^d p < 0.15$, ${}^c p < 0.10$, ${}^b p < 0.05$, ${}^a p < 0.01$. See section 3 for more details.

characteristics of executives switching firms (e.g., nationality, education, and age) as well as for fixed, country-, and year-specific characteristics of executives staying in the same firm (e.g., nationality, education, age, and country-specific knowledge). Thus, α truly picks up the effect of executives' past experience and not the effect of other attributes not ascribable to former job experience. Second, concerns about reverse causality are greatly alleviated thanks to these fixed effects. Even though it is possible that some shocks lead firm i to create subsidiaries in country c and year t and that this entry, in turn, prompts the firm to hire an executive familiar with country c, the battery of fixed effects should neutralize most of these shocks. I will elaborate on this in the next subsection.

Table 3 exhibits the benchmark results obtained with ordinary least squares. The coefficient is positive and statistically significant at the 1 percent level. Recruiting an executive with FDI-related experience with a given country increases the probability to own at least one subsidiary in this particular country by 1.5 percentage points. Put otherwise, the recruitment raises the average probability to have a subsidiary in the country by approximately 7 percent (= 0.015/0.229), so the effect is sizable. In a supplementary (and untabulated) regression, I look at exits and replace in equation (1) $FDI_{i,c,t}$ with a variable $EXIT_{i,c,t}$ equal to 0 if $FDI_{i,c,t} = 1$ and equal to 1 if $FDI_{i,c,t} = 0$

and $FDI_{i,c,t-1} = 1$. The regression delivers a $\hat{\alpha}$ that is not significantly different from 0. Thus, the departure of executives familiar with country c does not increase the probability of the firm to exit this country. Such an asymmetry goes along with the idea that experienced executives facilitate FDI by reducing the (sunk) cost of entry.

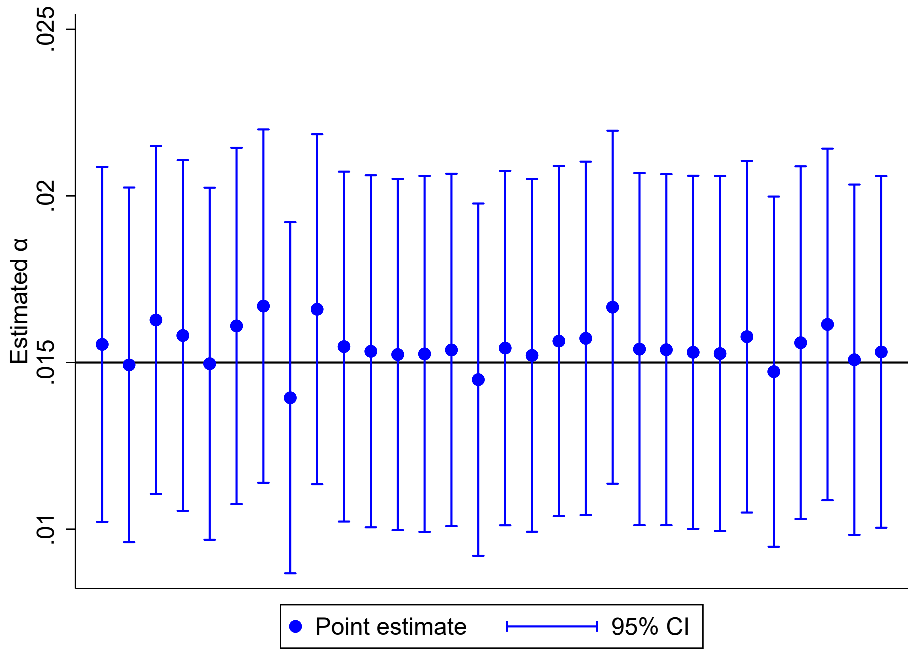
3.2 Robustness

I perform a series of tests to evaluate the robustness of this result. I start with a simple one: the omission of one country at a time. In figure 3, I re-run the baseline equation 30 times with 29 countries, removing in turn one country to make sure that the results are not driven by one country. As can be seen in the figure, the coefficients are globally stable across specifications. All the coefficients range between 0.014 and 0.017 so the effect is pervasive. Along the same lines, I reproduce in table 4 panel A the results when I randomly draw 30 foreign countries in the database [6] and I find consistent results. In two untabulated regressions, I also remove all firms that are involved in a merger/acquisition operation at some point between 1993 and 2014 and those not operating over the entire time span (entering after 1993 and/or exiting before 2014). The regressions deliver analogous results.

In table 4 panel B, I re-estimate equation (1) using the 2003-2014 period exclusively. Due to data limitations, I am unable to track executives prior to 1992 and firms' subsidiaries before 1993. Therefore, the assumption made so far is that executives have no FDI experience with the 30 countries before 1993. This assumption could go only against my results: by doing so, I incorrectly assign a zero to some $TREAT_{i,c,t}$ and thereby compress the gap between non-treated and treated triplets. To relieve this measurement error, I replicate the results ruling out the first ten years for the regression. This way, I leave a ten-year window period during which executives can move across firms and acquire (measurable) experience. Again and unsurprisingly, the coefficient is in line with the baseline one, both in terms of magnitude and statistical significance.

6. These countries are: Brazil, Bulgaria, Cameroon, China, Christmas Island, Croatia, Cuba, El Salvador, Finland, Greenland, Guernsey, India, Iran, Italy, Kazakhstan, Lao People's Democratic Republic, Mali, Malawi, Myanmar, Nepal, the Netherlands, Oman, Pakistan, Russia, Saint Barthélemy, Saint Pierre and Miquelon, Seychelles, Taiwan, Tunisia, and United Arab Emirates.

Figure 3 – Robustness check: exclusion of one country at a time



Notes. This figure depicts the regression results of equation (1) when removing one country at a time. The black line corresponds to the benchmark $\hat{\alpha} = 0.015$. The period is 1993-2014 and the results are obtained with ordinary least squares. Standard errors are clustered at the firm $\times$ year level. See section 3 for more details.

I question the pertinence of the estimation method and estimate binary models in table 4 panel C. As pointed out by de Chaisemartin and D'Haultfœuille (2020) (among others), the coefficient of interest is equal to the expectation of a weighted sum of ATE with, potentially, some negative weights. Hence, if the constant effect assumption is violated, it is theoretically possible to obtain a positive coefficient even if all ATE are in fact negative. I follow de Chaisemartin and D'Haultfœuille (2020) and calculate the share of negative weights in a set-up with two-way fixed effects, where firm $\times$ country fixed effects are eliminated. This share appears relatively small (14 percent), implying that this contingency is improbable. I re-estimate equation (1) with logit and probit in in table 4 panel C. There is no consensus in the literature on the most appropriate estimator, should the dependent variable be dichotomous (Horrace and Oaxaca, 2006; Angrist and Pischke, 2009; Battey et al., 2019; Gomila, 2020). On the one hand, li-

TABLE 4 – Robustness checks: others

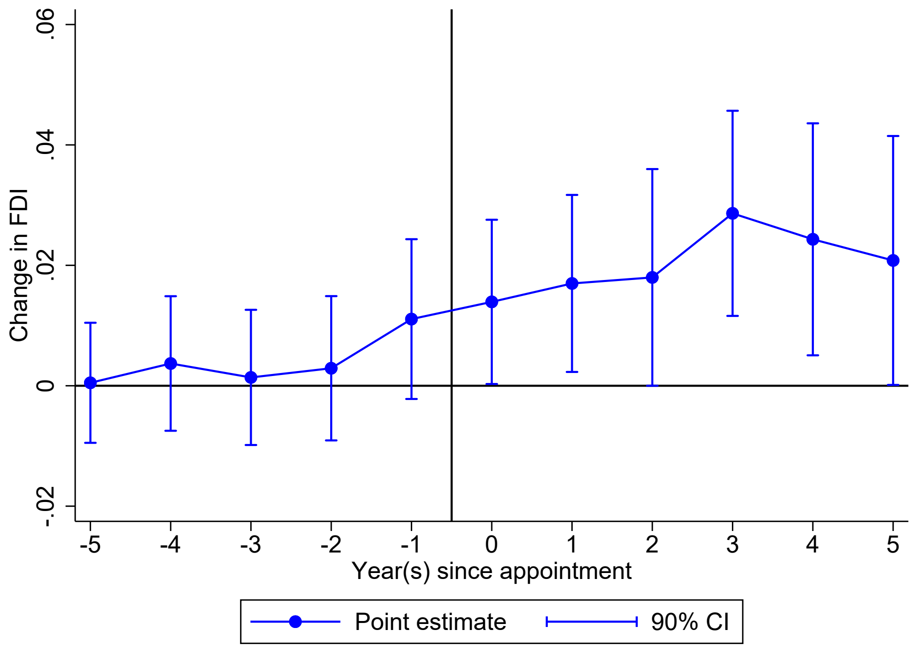
	$FDI_{i,c,t}$
Panel A: 30 randomly drawn foreign countries	
$TREAT_{i,c,t}$	0.027^a
Panel B: 2003-2014 period	
$TREAT_{i,c,t}$	0.017^a
Panel C: logit and probit	
$TREAT_{i,c,t}$ (logit)	0.074^c
$TREAT_{i,c,t}$ (probit)	0.052^c

Notes. This table reports regression results of equation (1). In panel A, the period is 1993-2014 and the results are obtained with ordinary least squares. In panel B, the period is 2003-2014 and the results are obtained with ordinary least squares. In panel C, the period is 1993-2014 and the results are obtained with logit or probit. Standard errors are clustered at the firm × year level and not reported for space. $^d p < 0.15$, $^c p < 0.10$, $^b p < 0.05$, $^a p < 0.01$. See section 3 for more details.

near probability models are commonly used for their simplicity and transparency, even though it has been raised that ordinary least squares estimates in the case of a binary outcome could be inconsistent under some conditions. On the other hand, binary models guarantee that the predicted probabilities lie on the unit interval, but they can be computationally demanding and might suffer from the incidental parameters problem. The coefficients would be biased if fixed effects are included and some groups must be dropped to maximize the likelihood, and the coefficients would need to be corrected accordingly. I cope with this capitalizing on the econometrics literature, and more specifically Hinz et al. (2020). Starting from the standard gravity model with exporter-time, importer-time, and exporter-importer fixed effects, they propose a correction for a class of models with three-way fixed effects akin to mine. I apply their correction in table 4 panel C. The coefficients remain positive and statistically significant and thus confirm that the findings are not influenced by the estimation method.

Finally, I deal with endogeneity in the next four exercises. First, I proceed with a placebo test. The fixed effects capture most of the shocks pushing firms to invest and open subsidiaries abroad. Nonetheless, there may still exist firm × country × year shocks correlated with the variable of interest $TREAT_{i,c,t}$ and impacting firms' presence in

Figure 4 – Dynamics of the effect



Notes. This figure depicts the regression results of equation (2). It depicts the $\hat{\beta}$ in black and the $\hat{\alpha}+\hat{\zeta}$ in blue. The period is 1993-2014 and the results are obtained with ordinary least squares. Standard errors are clustered at the firm $\times$ year level. See section 3 for more details.

foreign countries. To verify that these shocks should not jeopardize my results, I regress the following equation:

$$\begin{aligned} FDI_{i,c,t} &= \alpha TREAT_{i,c,t} + \sum_{k=1}^{5} \beta_k TREAT_{i,c,t}^{t+k} + \sum_{k=1}^{5} \zeta_k TREAT_{i,c,t}^{t-k} \\ &\quad + \mu_{i,t} + \upsilon_{c,t} + \gamma_{i,c} + \epsilon_{i,c,t} \end{aligned} \tag{2}$$

$TREAT_{i,c,t}^{t+k}$ is a variable equal in year t to the number of executives in firm i and year $t+k$ having experience with country c. The rationale is: if $\hat{\beta}_1$, $\hat{\beta}_2$, $\hat{\beta}_3$, $\hat{\beta}_4$, and $\hat{\beta}_5$ are not statistically different from zero, the treatment is unlikely to be a proxy for these firm $\times$ country $\times$ year shocks. These shocks would have to occur necessarily at the exact same year of the appointment to be problematic. It is worth noting that $\hat{\beta}_1$, $\hat{\beta}_2$, $\hat{\beta}_3$, $\hat{\beta}_4$, and $\hat{\beta}_5$ not statistically different from zero would at the same time validate the parallel trend assumption. It would mean that firms' presence in country c is unrelated to the

Table 5 – Robustness checks: endogeneity

	$FDI_{i,c,t}$
Panel A: 2SLS methodology	
$TREAT_{i,c,t}$	0.025^b
Panel B: exogenous movements	
$TREAT_{i,c,t}^{sudden}$	0.024^a
Panel C: PNTR as a quasi-natural experiment	
$TREAT_i \times TPU_{i,j,t}$	0.559^a
$TPU_{i,j,t}$	0.327^a

Notes. This table reports regression results of equation (1) in panel A, equation (3) in panel B, and equation (4) in panel C. In panel A, the period is 1993-2014 and the results are obtained with two-stage least squares. In panel B, the period is 1993-2014 and the results are obtained with ordinary least squares. In panel C, the period is 1995-2005 and the results are obtained with ordinary least squares and only China as foreign country. Standard errors are clustered at the firm × year level in panels A and B and clustered at the firm level in panel C. They are not reported for space. $^d p < 0.15$, $^c p < 0.10$, $^b p < 0.05$, $^a p < 0.01$. See section 3 for more details.

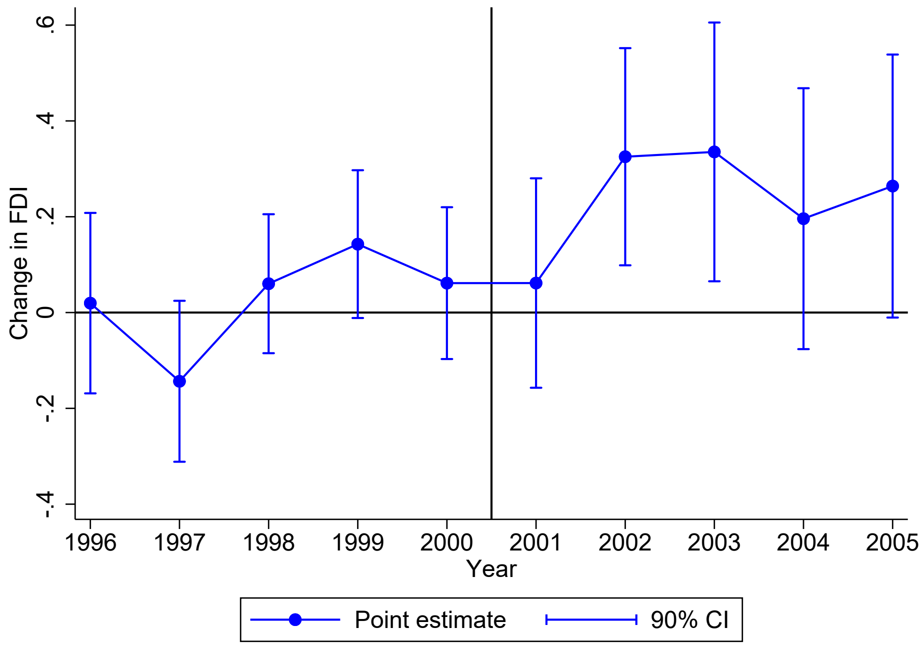
treatment before the hiring, i.e., there is no pre-trend. Symmetrically, $TREAT_{i,c,t}^{t-k}$ is equal in year t to the number of executives in firm i and year $t-k$ experienced with country c. The ζ coefficients inform on the dynamics of the effect post-treatment. α reflects the immediate impact of the hiring, $\alpha + \zeta_1$ the effect observed after one year, $\alpha + \zeta_1 + \zeta_2$ the effect observed after two years, and so on. Figure 4 plots the results of the regression. The $t-j$ coefficients, with $j \in [1, 2, 3, 4, 5]$, represent the estimated $\hat{\beta}$s. As expected, none of them is significantly different from zero at standard levels. The $t+j$ coefficients, with $j \in [1, 2, 3, 4, 5]$, denote the estimated $\alpha + \sum_{k=1}^{j} \zeta_k$. The graph suggests that the effect kicks in immediately after the recruitment, grows over time, and doubles after three years.

An alternative option to limit the problem that can be caused by firm × country × year shocks uncontrolled for in the regression is to instrument $TREAT_{i,c,t}$ by its three-year lag, drawing on Mion and Opromolla (2014) and Mion et al. (2019). In their paper, they claim that a three-year period is sufficient for past shocks not to affect current exporting activities. I transpose their hypothesis in this context and estimate the equation accordingly with two-stage least squares. The first stage attests that the instrument has power. The F-statistic is around 1,000, well above the range of critical values of Stock and Yogo (2005). The two-stage results in table 5 panel A coincide with the ones presented until now. The point estimate is larger, meaning that previous point estimates could even underestimate the effect.

Hiring a new executive and expanding overseas could be joint decisions – in which case the treatment would be correlated with contemporaneous and unobserved firm × country × year shocks – and the two previous tests do not allow me to properly unravel the effect of the recruitment from the effect of other investments. The placebo test only suggests that the treatment should not capture past shocks and the instrumental variables fundamentally rely on the assumption that past shocks have no incidence after three years. A complementary strategy consists in investigating the origin of the movements of executives across firms. Multiple reasons can lie behind these movements. Companies hire managers strategically and, ideally, would take the time to select the best fit. A typical example is when they poach the best executives from other enterprises. That being said, they sometimes have to replace former executives against their will or urgently after an unanticipated event, and I assume that endogeneity is less plausible under such circumstances.[7] As these firms are the largest ones, this information can be retrieved by collecting and scrutinizing numerous press releases, newspapers, and newswires (with Factiva) as well as official reports. I do it for each arrival and each departure manually to understand as precisely as possible the nature of each movement. I treat and code the following events as exogenous sources of variations in $TREAT_{i,c,t}$: abrupt resignations, retirements, deaths, early layoffs, and resignations and layoffs subsequent to legal investigations. The aim is to retain movements triggered by unexpected departures or initiated by executives themselves and to leave aside movements well-prepared by firms. For instance, if executive e who works for firm i dies in year t, then I will say that firm i faces an exogenous shock in year t and that the change in the stock of experienced managers between $t-1$ and t is exogenous. Concrete examples are attached

7. Another possible interpretation would be that entry in foreign markets needs not be planified many years in advance.

FIGURE 5 – PNTR and pre-existing trends



Notes. This figure depicts the regression results of equation (4) when augmenting the equation with nine independent variables: $\mathbb{1}_{t \geq k}\left(NNTR_{i,j,1999} - NTR_{i,j,1999}\right)$, $k \in [1996, 1997, 1998, 1999, 2000, 2002, 2003, 2004, 2005]$. The period is 1995-2005 and the results are obtained with ordinary least squares and only China as foreign country. Standard errors are clustered at the firm level. See section 4 for more details.

in the online appendix. I replace $TREAT_{i,c,t}$ with a new variable $TREAT^{sudden}_{i,c,t}$:

$$\begin{aligned} FDI_{i,c,t} &= \alpha TREAT^{sudden}_{i,c,t} + \mu_{i,t} + \upsilon_{c,t} + \gamma_{i,c} + \epsilon_{i,c,t} \qquad (3) \\ \text{with } TREAT^{sudden}_{i,c,t} &= TREAT^{sudden}_{i,c,t-1} + \mathbb{1}_{i,t}\left(TREAT_{i,c,t} - TREAT_{i,c,t-1}\right) \end{aligned}$$

$\mathbb{1}_{i,t}$ is a dummy variable equal to one if firm i is affected by an exogenous shock in years $t-1$ or t, as defined above. The new $\hat{\alpha}$, in table 5 panel B, matches the benchmark coefficient. More details and discussions are available in the online appendix.[8]

By the same token, I exploit a specific event in table 5 panel C: the granting of the Permanent Normal Trade Relations (PTNR) status by the US to China in 2000. US

8. Using $TREAT^{sudden}_{i,c,t}$ as an instrument for $TREAT_{i,c,t}$ in equation (1) instead yields $\hat{\alpha} = 0.037$, significant at the 1 percent level.

imports from non-market economies are generally subject to non-normal-trade-relations tariff rates (NNTR), known to be higher than normal-trade-relations tariff rates (NTR, or equivalenty most-favored-nation (MFN) tariff rates). Since the US Trade Act of 1974, US Presidents can grant NTR tariff rates to non-market economies on an annual basis upon approval by the US Congress. This is the reason why exports from China to the US were subject to NTR rates between 1980 and 2000, even though China was not considered as a market economy at the time. As documented by Pierce and Schott (2016), the annual renewal was nearly automatic in the 1980s. Nevertheless, the renewal became less systematic following the Tiananmen Square protests in 1989. In 1990, 1991, and 1992 for instance, the House of Representatives voted against the renewal of this particular status. Public opinion seemed against too. Gallup surveys revealed that 13 percent of Americans had a very or mostly unfavorable view of China months before the Tiananmen incidents. This proportion then suddenly increased and stayed above 50 percent througout the 1990s.[9] Other polls suggest that public opinion wanted the US to put more pressure on China and opposed Bush's conception of Sino-American relations (Skidmore and Gates, 1997). Hence, exporters in China could not perfectly forecast the tariffs they were about to face in the future and this uncertainty hindered trade. The conferral of the PNTR status in October 2000, quick and unanticipated,[10] ended this uncertainty. The quantification analysis conducted by Handley and Limão (2017) indicates that the reduction in trade policy uncertainty induced by the granting is responsible for a third of the growth of US expenditures in Chinese goods between 2000 and 2005. Besides, Gulen and Ion (2016), Choi et al. (2020), and Wu et al. (2020) demonstrate that policy uncertainty stifles corporate investments and FDI. Accordingly, we expect the granting to boost FDI relatively more in the sectors that were the most exposed to trade policy uncertainty. Furthermore, if managers significantly contribute to firms' FDI, the increase in FDI should be larger for firms having experienced managers. I proxy trade policy uncertainty using the gap between NNTR and NTR tariff rates at the industry level as in Pierce and Schott (2016). An interesting feature of this variable lies in its exogeneity: most of its variation stems from NNTR tariff rates, set a long

9. See `https://news.gallup.com/poll/1627/china.aspx`.

10. Greenland, Ion, Lopresti, and Schott (2020) for instance show that the PNTR status was relatively little mentioned in newspapers prior to the introduction of the bill in May 2000.

time ago by the Smoot-Hawley Tariff Act in 1930. I proceed with a triple-difference equation:

$$\begin{aligned} FDI_{i,t} &= \alpha TREAT_i \times TPU_{i,j,t} + \beta TPU_{i,j,t} + \mu_i + \upsilon_t + \epsilon_{i,t} \qquad (4) \\ \text{with } TPU_{i,j,t} &= \mathbb{1}_{t \geq 2001} \left(NNTR_{i,j,1999} - NTR_{i,j,1999} \right) \end{aligned}$$

$FDI_{i,t}$ is a binary variable indicating whether firm i has at least one subsidiary in China in year t and $TREAT_i$ is the number of executives in firm i experienced in managing operations with China. The regression is run between 1995 and 2005 and solely for firms in which the number of managers having experience with China is fixed over the period to eliminate the possibility that firms hire managers and expand simultaneously. $TPU_{i,j,t}$ is equal to zero before 2001 and then to the gap between the NNTR and NTR tariff rates in 1999 and industry j in which firm i mainly operates.[11] The identifying assumption is that, all else equal, trends in FDI would have been the same in all sectors in absence of the shock (see figure 5 for a test of the common trend assumption). The estimation results in table 5 panel C corroborate the two hypotheses. Altogether, the placebo test, the two-stage least squares regression, the identification strategy based on "exogenous" movements, and the one using the granting of the PNTR status as a quasi-natural experiment lend credence to a positive and causal effect of executives' experience on firms' FDI.

4 Executive experience and subsidiaries abroad: further results

The effect highlighted in section 3 naturally raises questions, such as: does FDI-related knowledge have to be country-specific to help firms penetrate new destinations ? Is the effect equivalent for all types of executives ? Does the effect also hold at the intensive margin ? Does experience translate into higher compensations ? I answer these questions in this section. Then, I address the specific case of tax havens and discuss the results'

11. Information on NNTR and NTR tariff rates is available only for manufacturing. As a consequence, equation (4) is regressed only for firms mainly operating in manufacturing, itself divided in 4-digit SIC industries.

implications regarding corporate tax avoidance.

4.1 Global *versus* country-specific knowledge

Section 3 shows that executives used to manage operations with a foreign country assist their firm in widening its network of subsidiaries in this country. Nonetheless, the econometric model used above cannot say whether executives stimulate FDI in other foreign countries too due to the firm × year fixed effects. As noted earlier, these fixed effects mechanically comprise the impact of year-specific characteristics of top managers. I remove the firm × year fixed effects and insert $TREAT_{i,t}$ into the right-hand side variables:

$$FDI_{i,c,t} = \alpha TREAT_{i,c,t} + \gamma TREAT_{i,t} + \upsilon_{c,t} + \gamma_{i,c} + \epsilon_{i,c,t} \tag{5}$$

$TREAT_{i,t}$ is a dummy variable equal to one if firm i has in year t at least one executive with FDI experience. γ has a simple interpretation in equation (5). Formally, we have:

$$\begin{aligned} \alpha &= \mathbb{E}\left(FDI_{i,c,t}/\upsilon_{c,t}, \gamma_{i,c}, TREAT_{i,c,t} = k+1, TREAT_{i,t} = 1\right) \\ &\quad -\mathbb{E}\left(FDI_{i,c,t}/\upsilon_{c,t}, \gamma_{i,c}, TREAT_{i,c,t} = k, TREAT_{i,t} = 1\right) \\ \gamma &= \mathbb{E}\left(FDI_{i,c,t}/\upsilon_{c,t}, \gamma_{i,c}, TREAT_{i,c,t} = 0, TREAT_{i,t} = 1\right) \\ &\quad -\mathbb{E}\left(FDI_{i,c,t}/\upsilon_{c,t}, \gamma_{i,c}, TREAT_{i,c,t} = 0, TREAT_{i,t} = 0\right) \end{aligned}$$

with k positive. Its estimation requires variation of $TREAT_{i,t}$ over time within firms and across non-treated triplets ($TREAT_{i,c,t} = 0$). γ symbolizes the effect of having one or several top managers familiar with any foreign country other than country c on the probability to own subsidiaries in this country c. The results can be visualized in table 6. $\hat{\alpha}$ is reassuringly consistent with the previous point estimates. More importantly, $\hat{\gamma}$ is close to zero. Hence, only market-specific knowledge of executives facilitates firms' entry in new countries.

Table 6 – Global *versus* country-specific experience

	$FDI_{i,c,t}$
$TREAT_{i,c,t}$	0.020^{a}
	(0.004)
$TREAT_{i,t}$	0.006^{d}
	(0.004)
Average probability	0.229
Country × year FEs	Yes
Firm × country FEs	Yes
R^2	0.692
Nb. of obs.	478,500

Notes. This table reports regression results of equation (5). The period is 1993-2014 and the results are obtained with ordinary least squares. Standard errors, in parentheses, are clustered at the firm × year level. $^{d}p < 0.15$, $^{c}p < 0.10$, $^{b}p < 0.05$, $^{a}p < 0.01$. See section 4 for more details.

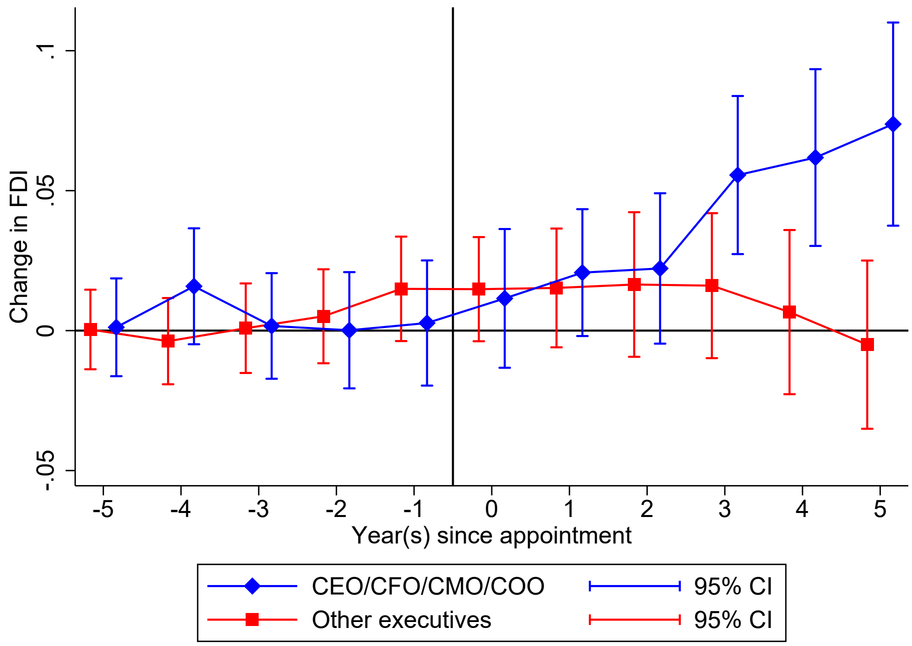
4.2 Asymmetries across occupations

A similar question pertains to the existence of non-linearities among executives: have they the same influence on FDI irrespective of their function ? Equation (6) provides some hints about this. The triple-difference equation extends equation (2) and allows for heterogeneous effects by separating CEO, CFO, CMO, and COO from the rest of the executives:

$$\begin{aligned} FDI_{i,c,t} \quad = \quad & \alpha TREAT_{i,c,t} + \alpha^{TE} TREAT^{TE}_{i,c,t} + \sum_{k=1}^{5} \beta_k TREAT^{t+k}_{i,c,t} + \sum_{k=1}^{5} \beta^{TE}_k TREAT^{TE,t+k}_{i,c,t} \\ & + \sum_{k=1}^{5} \zeta_k TREAT^{t-k}_{i,c,t} + \sum_{k=1}^{5} \zeta^{TE}_k TREAT^{TE,t-k}_{i,c,t} + \mu_{i,t} + \upsilon_{c,t} + \gamma_{i,c} + \epsilon_{i,c,t} \end{aligned} \tag{6}$$

$TREAT^{TE}_{i,c,t}$ indicates whether the CEO, CFO, CMO, and COO of firm i in year t are experienced with country c. It is always inferior to $TREAT_{i,c,t}$ and ranges from 0 to 4. Insofar as C-level executives "set the tone at the top", we anticipate a more pronounced effect for these executives, i.e., positive values for $\hat{\alpha}^{TE}$ and the $\hat{\zeta}^{TE}$. The results outlined in figure 6 suggest that the average effect estimated so far is indeed driven by CEO, CFO, CMO, and COO. While the latter significantly improve their firm's probability to own subsidiaries in the countries they have operated with, the graph shows that

Figure 6 – CEO/CFO/CMO/COO *versus* other executives



Notes. This figure depicts the regression results of equation (6). The period is 1993-2014 and the results are obtained with ordinary least squares. Standard errors are clustered at the firm × year level. See section 3 for more details.

experience of the other executives, on the opposite, has little influence on location choices of MNEs.

4.3 Intensive margin

I investigate the effect at the intensive margin by running the same regressions, with two exceptions: the dependent variable $FDI_{i,c,t}$ now represents the number of subsidiaries owned by firm i in country c and year t, and the regression is run conditional on having at least one subsidiary in the given country and given year. Doing so allows to make sure that α does not reflect a mix of extensive- and intensive-margin effects. Table 7 re-generates the OLS and 2SLS results shown in tables 3 and 5. Overall, the results reported in table 7 mirror the first ones for the extensive margin. They indicate that hiring experienced executives also increases the number of subsidiaries in a country, conditional on having at least one subsidiary in this country. In light of this, experience

Table 7 – Results at the intensive margin

	$FDI_{i,c,t}$
Panel A: OLS estimator	
$TREAT_{i,c,t}$	0.264^a
Panel B: 2SLS estimator	
$TREAT_{i,c,t}$	1.460^a

Notes. This table reports regression results of equation (1). The dependent variable in the two columns, $FDI_{i,c,t}$, is equal to the number of significant subsidiaries owned by firm i in country c and year t. $TREAT_{i,c,t}$ is a count variable representing the number of executives in firm i and year t who have previously worked for a firm with a significant subsidiary in country c at the time. In panel A, the period is 1993-2014, the regression is run conditional on $FDI_{i,c,t} \geq 1$, and the results are obtained with ordinary least squares. In panel B, the period is 1993-2014, the regression is run conditional on $FDI_{i,c,t} \geq 1$, and the results are obtained with two-stage least squares. Standard errors, in parentheses, are clustered at the firm $\times$ year level. ${}^d p < 0.15$, ${}^c p < 0.10$, ${}^b p < 0.05$, ${}^a p < 0.01$. See sections 3 and 4 for more details.

gained by top managers in their former firms is decisive both at the extensive and intensive margins. In untabulated results, I also estimate the effect at the intensive margin using pseudo-poisson maximum likelihood (PPML). Note that, in this case, we need not apply a correction for the incidental parameter problem. Taking the workhorse gravity model as example, Weidner and Zylkin (2019) demonstrate that, in a PPML model with three-way fixed effects, (i) estimates are consistent if the number countries is large enough and (ii) the bias induced by the incidental parameters problem substantially decreases as either the number of firms or periods increases. [12]

4.4 Experience and compensation

If executives used to manage activities with foreign countries help firms grow in international markets, we expect higher wages for these executives. This knowledge must be country-specific, making it an even rarer asset for which companies might compete in the labor market. Figure 7 depicts the distribution of compensations for executives with

12. More details are available upon request.

FIGURE 7 – Distribution of executive compensation

Notes. This figure depicts the distribution of executive compensation, distinguishing experienced and non-experienced managers. See section 4 for more details.

TABLE 8 – Executive experience and compensation

	$log(compensation_{e,i,t})$
$FDI\ experience_{e,t}$	0.112^{c}
	(0.060)
Executive FEs	Yes
Firm FEs	Yes
Year FEs	Yes
R^2	0.775
Nb. of obs.	52,273

Notes. This table reports regression results of equation (7). Executives' age in year t is included as control. The period is 1993-2014 and the results are obtained with ordinary least squares. Standard errors, in parentheses, are clustered at the firm $\times$ year level. $^{d}p < 0.15$, $^{c}p < 0.10$, $^{b}p < 0.05$, $^{a}p < 0.01$. See section 4 for more details.

or without experience. This information comes from ExecuComp and is available from 1993 onward. The compensation encompasses not only executives' salary, but also their bonuses, stock and option awards, long-term incentive plans, pensions, and all other pay. [13] The figure indicates that experienced executives have a higher compensation on average. I delve into this in table 8, where I regress a Mincer-type equation. This time, all executives in ExecuComp are included.

$$log(compensation_{e,i,t}) = \kappa FDI\ experience_{e,t} + \lambda age_{e,t} + \nu_e + \omega_i + \zeta_t + u_{e,i,t} \quad (7)$$

$log(compensation_{e,i,t})$ is the compensation of executive e working for firm i in year t (in logarithm). It is regressed on $FDI\ experience_{e,t}$, a dummy equal to one if executive e has worked for a multinational enterprise before joining the current firm in year t, on $age_{e,t}$, denoting executives' age, and on a set of executive, firm, and year fixed effects. The results affirm that FDI-related experience is a valuable asset in the labor market. $\hat{\kappa}$, equal to 0.112, indicates that FDI-related knowledge is associated with a 11.2 percent wage premium.

4.5 Entry in tax havens and profit shifting

Before concluding, I examine whether the main finding holds for a very peculiar subset of countries: tax havens. Multinational corporations exploit technicalities of the law to avoid taxes. They employ multiple techniques whose objective is to artificially increase profits registered in low-tax jurisdictions and decrease those recorded in high-tax countries (Beer, de Mooij, and Liu, 2020). They manipulate transfer prices, strategically locate intellectual property rights, record sales in low-tax jurisdictions, and proceed with intra-firm loans, treaty shopping, and corporate inversions. Determinants of profit shifting and more generally corporate tax avoidance have received growing attention (Wang, Xu, Sun, and Cullinan, 2020). However, to date, experience of executives in tax avoidance has been neglected even though anecdotal evidence suggests that it is influen-

13. As is standard in the literature (Gabaix and Landier, 2008; Chhaochharia and Grinstein, 2009; Faulkender and Yang, 2010; Graham et al., 2012), I take the variable denoted $TDC1$ for compensations. This variable is filled in for the 1993-2014 period but its calculation changed in 2006. I adjust the values post-2006 following Gabaix, Landier, and Sauvagnat (2014).

TABLE 9 – The case of tax havens

	$FDI_{i,c,t}$
Panel A: standard definition	
$TREAT_{i,c,t}$	0.028^{a}
Panel B: restricted definition	
$TREAT_{i,c,t}$	0.024^{a}

Notes. This table reports regression results of equation (1). The regression is run only for tax havens. The period is 1993-2014 and the results are obtained with ordinary least squares. Standard errors are clustered at the firm × year level. They are not reported for space. ${}^{d}p < 0.15$, ${}^{c}p < 0.10$, ${}^{b}p < 0.05$, ${}^{a}p < 0.01$. See section 4 for more details.

tial. A well-known case is Wal-Mart. David Bullington, Wal-Mart's vice president for tax policy between 1994 and 2010, once declared that he started being under pressure to decrease Wal-Mart's effective tax rate when the CFO Thomas Schoewe was appointed in 2000. He said that Mr. Schoewe was familiar with "some very sophisticated and aggressive tax planning" and that "he rode herd on [them] all the time that [they] have the world's highest tax rate of any major company" (Drucker, 2007). Recently, in late 2020, concerns have emerged about the CEO of the not-for-profit firm Newmarch House, Grant Millard. He was accused to have directed tax affairs at Coca-Cola and contributed to its tax dodging strategies as director/manager of several subsidiaries incorporated in tax havens (CICTAR, 2020; Klan, 2020).

In table 9, I re-run equation (1) with tax havens exclusively. In panel A, I follow the classifications proposed by Hines and Rice (1994) and Dyreng and Lindsey (2009). I cross these two lists and consider a country as a tax haven if either Hines and Rice (1994) or Dyreng and Lindsey (2009) characterize it as such. [14] In panel B, I exclude the largest tax havens – Hong Kong, Ireland, Luxembourg, Malaysia, Singapour, and Switzerland

14. The 50 following countries are treated as tax havens: Andorra, Anguilla, Antigua, Aruba, Bahamas, Bahrain, Barbados, Barbuda, Belize, Bermuda, British Virgin Islands, Cayman Islands, Cook Islands, Costa Rica, Cyprus, Dominica, Gibraltar, Grenada, Guernsey, Hong Kong, Ireland, Isle of Man, Jersey, Jordan, Lebanon, Liberia, Liechtenstein, Luxembourg, Macau, Malaysia, Maldives, Malta, Marshall Islands, Mauritius, Monaco, Montserrat, Nauru, Netherlands Antilles, Niue, Panama, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Saint Martin, Samoa, San Marino, Seychelles, Switzerland, Turks and Caicos Islands, and Vanuatu. Channel Islands and UK Caribbean Islands both appear in Hines and Rice (1994) but are omitted due to data limitations.

– because FDI in these countries might be unrelated to tax avoidance (e.g., proximity-concentration trade-off and/or export platform). On the contrary, FDI in small and remote islands in the likes of Barbados and Jersey are more likely to fall within the sole scope of profit shifting. In the two panels, the results are consistent with the previous ones. All in all, they unveil a new mechanism whereby profit shifting practices spread across multinational firms and carry policy implications. Losses in tax revenues due to profit shifting are potentially substantial (Tørsløv, Wier, and Zucman, 2018) and public authorities have taken actions to curb these activities. The Base Erosion and Profit Shifting (BEPS) initiative led jointly by the Organisation for Economic Cooperation and Development (OECD) and G20 illustrates the salience of the issue. With this in mind, these findings suggest that tracking movements of top executives could be useful to predict firms' future use of tax havens and that more audit resources should be devoted to firms hiring top executives from firms transferring income to tax havens.

5 Conclusion

To the best of my knowledge, the effect of executives' experience on the location decisions of multinational firms has not been studied in the literature. This paper attempts to fill this gap. As a first step, I assemble a novel and rich database following executives across S&P 1500 firms and geolocating these companies' subsidiaries worldwide. Then, I conduct an event study. I analyze S&P 1500 enterprises' network of subsidiaries before and after the appointment of top managers, with or without country-specific experience. The results show that hiring a top manager having worked for a firm that had at least one subsidiary in a given country increases the average probability to be present in this country by around 7 percent. Moreover, I find that experience in managing foreign operations (i) should be country-specific to be determinant, (ii) is all the more decisive if it comes from the highest-level executives, (iii) allows corporations to enlarge their network in the countries where they are already implanted, and (iv) entails a wage premium in the labor market. These findings, validated by multiple sensitivity tests, demonstrate that firms hire experienced top executives precisely to boost their operations overseas and/or to shift profits towards tax havens.

References

Angrist, J. D. and J.-S. Pischke (2009): *Mostly harmless econometrics: An empiricist's companion*, Princeton University Press.

Antràs, P. and S. R. Yeaple (2014): "Multinational firms and the structure of international trade," in *Handbook of International Economics*, Elsevier, vol. 4, 55–130.

Asker, J., J. Farre-Mensa, and A. Ljungqvist (2014): "Corporate investment and stock market listing: A puzzle?" *Review of Financial Studies*, 28, 342–390.

Balsvik, R. (2011): "Is labor mobility a channel for spillovers from multinationals? Evidence from Norwegian manufacturing," *Review of Economics and Statistics*, 93, 285–297.

Barrios, J. M. and J. Gallemore (2019): "Tax-related human capital: Evidence from employee movements," *mimeo*.

Battey, H., D. Cox, and M. Jackson (2019): "On the linear in probability model for binary data," *Royal Society Open Science*, 6, 190067.

Beer, S., R. de Mooij, and L. Liu (2020): "International corporate tax avoidance: A review of the channels, magnitudes, and blind spots," *Journal of Economic Surveys*, 34, 660–688.

Bisztray, M., M. Koren, and A. Szeidl (2018): "Learning to import from your peers," *Journal of International Economics*, 115, 242–258.

Blonigen, B. A. and J. Piger (2014): "Determinants of foreign direct investment," *Canadian Journal of Economics/Revue canadienne d'économique*, 47, 775–812.

Brown, J. L. (2011): "The spread of aggressive corporate tax reporting: A detailed examination of the corporate-owned life insurance shelter," *Accounting Review*, 86, 23–57.

Brown, J. L. and K. D. Drake (2014): "Network ties among low-tax firms," *Accounting Review*, 89, 483–510.

Cen, L., E. L. Maydew, L. Zhang, and L. Zuo (2017): "Customer-supplier relationships and corporate tax avoidance," *Journal of Financial Economics*, 123, 377–394.

Chhaochharia, V. and Y. Grinstein (2009): "CEO compensation and board structure," *Journal of Finance*, 64, 231–261.

Choi, S., D. Furceri, and C. Yoon (2020): "Policy uncertainty and foreign direct investment," *Review of International Economics*, forthcoming.

Choquette, E. and P. Meinen (2015): "Export spillovers: Opening the black box," *The World Economy*, 38, 1912–1946.

Christensen, D. M., D. S. Dhaliwal, S. Boivie, and S. D. Graffin (2015): "Top management conservatism and corporate risk strategies: Evidence from managers' personal political orientation and corporate tax avoidance," *Strategic Management Journal*, 36, 1918–1938.

CICTAR (2020): "Caring for growth: Australia's largest non-profit aged care operators," *technical report*.

Cui, L., Y. Li, K. E. Meyer, and Z. Li (2015): "Leadership experience meets ownership structure: Returnee managers and internationalization of emerging economy firms," *Management International Review*, 55, 355–387.

de Chaisemartin, C. and X. D'Haultfœuille (2020): "Two-way fixed effects estimators with heterogeneous treatment effects," *American Economic Review*, 110, 2964–2996.

DeBacker, J., B. T. Heim, and A. Tran (2015): "Importing corruption culture from overseas: Evidence from corporate tax evasion in the United States," *Journal of Financial Economics*, 117, 122–138.

Demena, B. A. and P. A. van Bergeijk (2017): "A meta-analysis of FDI and productivity spillovers in developing countries," *Journal of Economic Surveys*, 31, 546–571.

Drucker, J. (2007): "Inside Wal-Mart's bid to slash state taxes – Ernst & Young devises complex strategies; California pushes back," *Wall Street Journal*, October 23.

Dyreng, S., J. L. Hoopes, P. Langetieg, and J. H. Wilde (2020): "Strategic subsidiary disclosure," *Journal of Accounting Research*, 58, 643–692.

Dyreng, S. D., M. Hanlon, and E. L. Maydew (2010): "The effects of executives on corporate tax avoidance," *Accounting Review*, 85, 1163–1189.

Dyreng, S. D. and B. P. Lindsey (2009): "Using financial accounting data to examine the effect of foreign operations located in tax havens and other countries on US multinational firms' tax rates," *Journal of Accounting Research*, 47, 1283–1316.

Faulkender, M. and J. Yang (2010): "Inside the black box: The role and composition of compensation peer groups," *Journal of Financial Economics*, 96, 257–270.

Frey, L. (2018): "Tax certified individual auditors and effective tax rates," *Business Research*, 11, 77–114.

Gabaix, X. and A. Landier (2008): "Why has CEO pay increased so much?" *Quarterly Journal of Economics*, 123, 49–100.

Gabaix, X., A. Landier, and J. Sauvagnat (2014): "CEO pay and firm size: An update after the crisis," *Economic Journal*, 124, F40–F59.

Gallemore, J., B. Gipper, and E. Maydew (2019): "Banks as tax planning intermediaries," *Journal of Accounting Research*, 57, 169–209.

Gomila, R. (2020): "Logistic or linear? Estimating causal effects of experimental treatments on binary outcomes using regression analysis," *Journal of Experimental Psychology: General*, forthcoming.

Graham, J. R., S. Li, and J. Qiu (2012): "Managerial attributes and executive compensation," *Review of Financial Studies*, 25, 144–186.

Greenaway, D. and R. Kneller (2007): "Firm heterogeneity, exporting and foreign direct investment," *Economic Journal*, 117, F134–F161.

Greenland, A., M. Ion, J. Lopresti, and P. Schott (2020): "Using equity market reactions to infer exposure to trade liberalization," *mimeo*.

Gulen, H. and M. Ion (2016): "Policy uncertainty and corporate investment," *Review of Financial Studies*, 29, 523–564.

Handley, K. and N. Limão (2017): "Policy uncertainty, trade, and welfare: Theory and evidence for China and the United States," *American Economic Review*, 107, 2731–83.

Helpman, E., O. Itskhoki, M.-A. Muendler, and S. J. Redding (2017): "Trade and inequality: From theory to estimation," *Review of Economic Studies*, 84, 357–405.

Helpman, E., M. J. Melitz, and S. R. Yeaple (2004): "Export versus FDI with heterogeneous firms," *American Economic Review*, 94, 300–316.

Herrmann, P. and D. K. Datta (2006): "CEO experiences: Effects on the choice of FDI entry mode," *Journal of Management Studies*, 43, 755–778.

Heyman, F., F. Sjöholm, and P. G. Tingvall (2007): "Is there really a foreign ownership wage premium? Evidence from matched employer–employee data," *Journal of International Economics*, 73, 355–376.

Hijzen, A., P. S. Martins, T. Schank, and R. Upward (2013): "Foreign-owned firms around the world: A comparative analysis of wages and employment at the micro-level," *European Economic Review*, 60, 170–188.

Hines, J. R. and E. M. Rice (1994): "Fiscal paradise: Foreign tax havens and American business," *Quarterly Journal of Economics*, 109, 149–182.

Hinz, J., A. Stammann, and J. Wanner (2020): "State dependence and unobserved heterogeneity in the extensive margin of trade," *mimeo*.

Horrace, W. C. and R. L. Oaxaca (2006): "Results on the bias and inconsistency of ordinary least squares for the linear probability model," *Economics Letters*, 90, 321–327.

Kimura, F. and K. Kiyota (2006): "Exports, FDI, and productivity: Dynamic evidence from Japanese firms," *Review of World Economics*, 142, 695–719.

Klan, A. (2020): "EXCLUSIVE: Newmarch House CEO tied to global tax scandal," *The Klaxon*, September 4.

Law, K. K. and L. F. Mills (2017): "Military experience and corporate tax avoidance," *Review of Accounting Studies*, 22, 141–184.

Lenoir, C. and B. Patault (2019): "Sales managers, poaching and network transmission in international markets," *mimeo.*

Lim, C. Y., T. J. Shevlin, K. Wang, and Y. Xu (2018): "Tax knowledge diffusion through individual auditor network ties: Evidence from China," *mimeo.*

Lööf, H. and I. Viklund-Ros (2020): "Board of directors and export spillovers: What is the impact on extensive margins of trade?" *The World Economy*, 43, 1188–1215.

Marchal, L. and C. Nedoncelle (2019): "Immigrants, occupations and firm export performance," *Review of International Economics*, 27, 1480–1509.

Meinen, P., P. Parrotta, D. Sala, and E. Yalcin (2018): "Managers as knowledge carriers-explaining firms' internationalization success with manager mobility," *mimeo.*

Mion, G. and L. D. Opromolla (2014): "Managers' mobility, trade performance, and wages," *Journal of International Economics*, 94, 85–101.

Mion, G., L. D. Opromolla, and A. Sforza (2019): "The diffusion of knowledge via managers' mobility," *mimeo.*

MORICONI, S., G. PERI, AND D. POZZOLI (2020): "The role of institutions and immigrant networks in firms' offshoring decisions," *Canadian Journal of Economics/Revue canadienne d'Economique*, forthcoming.

MULLER, J. AND A. WEINRICH (2020): "Tax knowledge diffusion via strategic alliances," *mimeo*.

OLSEN, K. J. AND J. STEKELBERG (2016): "CEO narcissism and corporate tax sheltering," *Journal of the American Taxation Association*, 38, 1–22.

PARROTTA, P., D. POZZOLI, AND D. SALA (2016): "Ethnic diversity and firms' export behavior," *European Economic Review*, 89, 248–263.

PIERCE, J. R. AND P. K. SCHOTT (2016): "The surprisingly swift decline of US manufacturing employment," *American Economic Review*, 106, 1632–62.

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

SALA, D. AND E. YALCIN (2015): "Export experience of managers and the internationalisation of firms," *The World Economy*, 38, 1064–1089.

SCHROEDER, S. (2019): "Exporters, multinationals and residual wage inequality: Evidence and theory," *mimeo*.

SKIDMORE, D. AND W. GATES (1997): "After Tiananmen: The struggle over US policy toward China in the Bush administration," *Presidential Studies Quarterly*, 27, 514–539.

STOCK, J. AND M. YOGO (2005): "Testing for weak instruments in linear IV regression," in *Identification and Inference for Econometric Models*, ed. by D. W. Andrews, Cambridge University Press, 80–108.

TØRSLØV, T. R., L. S. WIER, AND G. ZUCMAN (2018): "The missing profits of nations," *mimeo*.

WANG, F., S. XU, J. SUN, AND C. P. CULLINAN (2020): "Corporate tax avoidance: A literature review and research agenda," *Journal of Economic Surveys*, 34, 793–811.

Weidner, M. and T. Zylkin (2019): "Bias and consistency in three-way gravity models," *mimeo.*

Wen, W., H. Cui, and Y. Ke (2020): "Directors with foreign experience and corporate tax avoidance," *Journal of Corporate Finance*, forthcoming.

Wu, J. G., J. Zhang, Y. Wu, and D. Kong (2020): "When to go abroad: Economic policy uncertainty and Chinese firms' overseas investment," *Accounting & Finance*, 60, 1435–1470.

Online appendix: causes of executive mobility

This appendix details how the database documenting the context of executives' arrivals and departures is constructed. I briefly re-explain why it is important to have such information and then describe the methodology.

In this paper, I combine ExecuComp and Exhibit 21 data and exploit movements of executives across firms to highlight the effect of their experience on firms' presence abroad. One caveat however is that ExecuComp provides little information regarding the causes of these movements. We do not know for instance whether executive e leaving firm i was laid off, died, etc. Yet, this information is important: firms could decide to reach a new market and to recruit experienced managers simultaneously, in which case the number of experienced managers may also reflect unobserved investments made by firms to penetrate the targeted country. More technically, the treatment variable could capture the effect of unobserved and contemporaneous firm $\times$ country $\times$ year shocks. This endogeneity issue is quite plausible in situations where firms poach executives from other firms as part of their strategy and precisely because of their profile. On the contrary, movements triggered by unexpected departures or initiated by executives themselves – and not by firms – are less likely to be endogenous.

I investigate the causes of executive mobility using official documents (e.g., SEC and FBI official reports) and Factiva for press releases, newswires, and newspapers (e.g., firms' websites, Wall Street Journal, New York Times, Business Wire, PR Newswire). To fully and precisely understand these movements, I do it manually, one by one. As a result, the dataset is partial at this point (165 executives, randomly drawn, are covered, i.e., around 5 percent of all executives included in the database).[15] I focus on five particular scenarios: deaths, abrupt resignations, retirements, sudden layoffs, and resignations and lay offs caused by legal investigations.

15. Note that this incompleteness only goes against the findings: the higher the number of exogenous shocks, the higher the variation that can be exploited, and the higher the precision of the point estimates. Moreover, relying simply on the information contained in ExecuComp yields consistent results. ExecuComp, in some cases, reports whether the departure of an executives is due to a retirement or a resignation. Using only this information, I find $\hat{\alpha} = 0.022$, significant at the 1 percent level.

I argue that changes in the stock of experienced managers are exogenous under these circumstances. The change in the stock of experienced managers between year $t-1$ and t in firm i is considered exogenous if executive e, working for firm i, dies in year $t-1$ or t. In the same vein, this change is assumed exogenous if executive e resigns in year $t-1$ or t unexpectedly. A resignation is deemed abrupt if the immediate replacement is not permanent, if it is due to personal reasons, or if it is to pursue other opportunities. In the absence of specific information, I consider it to be abrupt if it is effective three months before its announcement. Sometimes, what is defined as a sudden resignation is actually expected and initiated by firms, for example when financial results are perceived as unsatisfactory. This explains why I deviate from this standard definition in some cases, in light of the information available. The same logic applies to sudden and early layoffs: in some cases, an executive is ousted a few months after the appointment. If unfortunately there is no relevant information as to why executive e leaves the current firm, I treat the movement as being endogenous. To illustrate how I do in practice, I propose concrete examples below.

1. "*August 12, 1999 – DBT Online, Inc. announced that Ron Fournet, Chief Information & Technology Officer, has been named President and CEO, replacing Charles A. Lieppe, who resigned as an Officer and Director effective immediately due to personal reasons.* "A sudden illness in my immediate family made it impossible for me to devote my full attention to DBT," *said Mr. Lieppe, who joined DBT as President and CEO in 1997.*" (SEC Exhibit 99.1 Form of DBT, August 13, 1999)

   → The shock faced by DBT in 1999 is exogenous insofar as Charles A. Lieppe left suddenly and on his own volition.

2. "*Avon Products Inc. fired its vice chairman [Charles W. Cramb] in connection with probes into possible bribery overseas and improper disclosures to Wall Street analysts in the US.*" (Wall Street Journal, January 31, 2012)

   → The shock faced by Avon in 2012 is exogenous insofar as the departure of Charles W. Cramb results from an investigation.

3. "*Impax Laboratories Inc.'s board has elected Robert Burr chairman.Burr, who has*

been an independent director of the Hayward company since 2001, succeeds Charles Hsiao, co-founder of Impax's predecessor, IMPAX Pharmaceuticals Inc. Hsiao died in August." (The Business Journals, December 15, 2008)

→ The shock faced by IMPAX in 2008 is exogenous because it is attributable to the death of Charles Hsiao.

4. "*Sears Holdings Corp. abruptly announced the departure of president and chief executive Aylwin B. Lewis on Monday, leaving a management void at the top of the department store chain controlled by chairman Edward S. Lampert as it tries a high-stakes restructuring to reconnect with customers and reinvigorate slumping sales. Lewis was at fast-food chain Yum Brands Inc. and had little retail experience when he was hand-picked by Lampert in 2004 to run Kmart and later Sears. W. Bruce Johnson was named interim CEO while the company looks for a permanent successor.*" (Tampa Bay Times, January 29, 2008)

   → The shock faced by Sears in 2008 is exogenous since the firm did not have time to find directly a permanent replacement.

5. "*Progress also announced that Charles F. Wagner, Jr., chief financial officer, will leave the company effective immediately. In the interim until a new Chief Financial Officer is appointed, Mr. Bhatt will assume Mr. Wagner's responsibilities as Chief Financial Officer.*" (Business Wire, March 28, 2012)

   → The shock faced by Progress in 2012 is exogenous for the same reason.

6. "*Progress Software Corporation, a leading software provider that enables enterprises to be operationally responsive, announced today the appointment of Charles "Charlie" F. Wagner as executive vice president, Finance & Administration and chief financial officer (CFO), reporting to Richard D. Reidy, president and chief executive officer. Richard D. Reidy said:* "We are delighted with the appointment of Charlie Wagner after a search process that considered a very strong field of candidates."" (Market Wire, November 15, 2010)

   → The shock faced by Progress in 2010 is endogenous this time as the firm appointed Charles F. Wagner after a long process.

7. "*PictureTel taps WorldCom's [Bruce] Bond in a bid to boost company's sales.*" (Wall Street Journal, February 10, 1998)

→ The shock faced by PictureTel in 1998 is endogenous since the appointment is purely strategic.

It is worth mentioning that it is possible to identify movements of executives related to mergers and acquisitions (M&A). For instance, ExecuComp records the departure of Arthur L. Swift from the company Cirrus Logic in 2000. In fact, his apparent departure stems from a series of M&A operations of Cirrus Logic, first with ISD Corporation and then with LynuxWorks. Indeed, we can find the following information: "*Arthur L. Swift has served as our Chief Operating Officer since October 2000. From March 2000 to October 2000, Mr. Swift served as President and Chief Operating Officer of ISDCorp. From August 1999 to March 2000, Mr. Swift was Vice President and General Manager of the Magnetic Storage Division of CirrusLogic, a semiconductor company*" (SEC Form S-1 of LynuxWorks filed in October 2000), "*Cirrus Logic has hived off its graphics software business to ISD Corporation. Financial terms were undisclosed, but we assume that money flowed into Cirrus' coffers from ISD. Broad outlines of the outsourcing deal are in the public domain. ISD is to take on all the workers of the Cirrus Logic PC graphics software group, organizing the team as a standalone division. It will also handle all customer relationships and support agreements for Cirrus graphics software*" (The Register, October 14, 1998), and "*LynuxWorks Inc. is ready to roll out the most recent version of its Linux-based operating system, and the first since its merger with ISD Corp*" (EE Times, October 8, 2000).

Table AT1 – Executive mobility

Number of executives	165
Number of movements observed	487
Number of movements considered as exogenous	164
of which are related to resignations	105
of which are related to interim replacements	54
of which are related to retirements	33
of which are related to legal investigations	9
of which are related to sudden layoffs	5
of which are related to deaths	2

Notes. One remark is in order: resignations and interim replacements generally overlap, but not always. Some interim replacements are not associated with resignations and inversely. This is for instance the case if executive e temporarily replaces another executive e' who is not in my database until a permanent replacement is found. The same logic applies to layoffs and resignations and layoffs linked to legal investigations.