

Learning the Ropes? Executive Experience and Location Choices of Multinational Firms

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Abstract: What makes firms invest in foreign countries? This paper argues that executives' experience contributes to location decisions of multinational enterprises. Through an event study, I show that hiring an executive used to oversee multinational operations with a given country enables the firm to scale up its activities in this country. Moreover, only country-specific experience of C-level executives is determinant and experience in managing multinational activities yields a compensation premium. A series of robustness checks corroborate the findings and four alternative identification strategies based on instrumental variables, trade policy reforms, and plausibly exogenous shocks like executive deaths support a causal interpretation of the results. In line with anecdotal evidence, the paper thus demonstrates that top executives develop valuable country-specific knowledge while working for multinationals and significantly help the latter expand abroad. It also draws policy conclusions, in particular for tax havens and profit shifting.

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

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

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1 Introduction

What makes enterprises invest abroad? Attracting and encouraging foreign direct investments (FDIs) has long been a priority for governments. To benefit from technology transfers, increase employment, and stimulate growth, countries have been using a number of incentives such as tax relief, subsidies, credits, preferential contracts, and special economic zones. For firms, opening subsidiaries overseas is a difficult and risky step. It has for example been shown that only the most productive firms have the resources to become multinational (Helpman, Melitz, and Yeaple, 2004) and that companies experiment with exports before engaging in FDIs due to uncertainty about profitability in foreign markets (Conconi, Sapir, and Zanardi, 2016). Executives, as strategic decision-makers, probably play a key role in the internationalization process. Vast anecdotal evidence suggests that their knowledge and experience substantially contribute to firms' international activities.¹ Systematic evidence on this issue, however, is relatively scarce. The present paper fills this gap and confirms that executives bolster global firms' expansion. I isolate the effect of one characteristic: their experience in managing multinational operations. I demonstrate that executives help their current company broaden its network of subsidiaries in the countries where the enterprises they previously worked for had subsidiaries themselves.

In the first part of the paper, I assemble data on executives, financial statements, and subsidiaries of firms listed on the Standard & Poor's (S&P) 1500 index between 1993 and 2013. The data originate from Compustat, ExecuComp, and Exhibit 21. Compustat provides balance sheets, income statements, and cash flows of US-listed firms, while ExecuComp informs on the function and compensation of executives in S&P 1500 companies. Both databases are standard in economics, finance, international business, and management. They notably allow tracking movements of executives across S&P 1500 firms. Exhibit 21

1. In 2015, Black Box, a multinational 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>.

data, on the other hand, are more rarely used. The Securities and Exchange Commission (SEC) requires US-listed companies to disclose every year a list of their subsidiaries worldwide. Access to the filings is free and public on the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. I compile on this basis a dataset at the firm-country-year level. For each firm and each year, it indicates the number of subsidiaries in each country as well as the number of executives having multinational experience with this country. Therefore, the study departs from prior ones insofar as the data, more disaggregated, make it possible to unravel the country-specific experience of executives. The second part of the paper consists of an event study. I scrutinize the evolution of the number of subsidiaries that a firm declares in a country before and after appointing an executive familiar with this country. This approach enables me to quantify the effect of country-specific experience of executives on FDIs. Thanks to the granularity of the data and a collection of fixed effects, the effect is clean from many confounding factors. Firm-year fixed effects control for all time-invariant and time-variant firm-level determinants of FDIs. These determinants include (but are not limited to) firm productivity and firm size. The firm-year fixed effects further embed fixed and (firm-)year-specific attributes of executives, inclusive of education, age, and within-firm experience. They are coupled with country-year and firm-country fixed effects. The former capture labor costs, market size, fiscal incentives, and all other country-level features that influence FDIs. For their part, firm-country fixed effects incorporate all firm-country factors driving firms' location choices, like the distance between the foreign country and the headquarters. In total, the fixed effects ensure to pick up the effect of country-specific experience gained by executives and not the effect of unobserved variables not attributable to the professional background of these individuals.

The baseline equation puts the accent on the extensive margin of FDIs. The regression results show that employing an executive having worked for a firm present in a given country at the time augments the probability to be implanted in this country by 2.3 percentage points on average, i.e., 52 percent. Interestingly, the reverse is not true. Departures of experienced executives do not prompt firms to exit foreign markets. It thus appears that executive experience eases FDIs through a reduction of the (sunk) cost of entry, whose existence has been acknowledged in the literature ([Helpman et al., 2004](#); [Kimura and Kiyota, 2006](#); [Greenaway and Kneller, 2007](#)). These findings are validated by numerous robustness checks. They hold when removing possible outliers (either firms or countries), adopting different estimation methodologies (linear probability and binary models), and adjusting for potential measurement errors. Importantly, they hold after controlling for executives' origin, inferred by way of web scraping techniques (via *FamilySearch*) or ma-

chine learning algorithms (via *NamePrism*).

The paper then addresses endogeneity concerns. The benchmark result highlights a strong correlation between appointments of experienced executives and firm entry in foreign markets. A caveat is that firms might make other firm-country-year investments before engaging in FDIs, and such investments are unobserved. Hence, the results could still be attributable to unaccounted for firm-country-year shocks. Two arguments dismiss this view. The dynamics and more precisely the parallel trends are reminiscent of a causal effect. In addition, executives with multinational experience receive a higher compensation all other things being equal. It means that hiring experienced executives is more costly. Companies are rational and strategic, so the reason why they invest in this knowledge is that they expect a higher profitability. All the same, four tests are proposed to further support the existence of a causal effect. First, I carry out a placebo test to guarantee that there are no pre-existing trends in firms' presence overseas. Beyond confirming the common trend assumption, the absence of pre-trends implies that the treatment is unlikely to mirror past firm-country-year shocks and other omitted variables. Second, I borrow the identification strategy of [Mion and Opromolla \(2014\)](#) and use the number of experienced executives three years prior as an instrument. The underlying assumption is that new appointments have no effect on firms' expansion after three years, for which I provide suggestive evidence, and the two-stage least squares (2SLS) results align with the reference ones. Third, I consult official reports and use Factiva to scan newspapers, newswires, and press releases. The objective is to see what causes executive mobility. The material lets us know whether some of the movements occurring 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 executives. I assume that changes in the stock of experienced executives are less likely to be correlated with unobserved shocks if they are triggered by the executives themselves or unforeseen circumstances. Again, the new results concur in terms of economic and statistical significance. Finally, I exploit the US conferral of Permanent Normal Trade Relations (PNTR) status on China in late 2000 as a quasi-natural experiment. The literature documents (i) that policy uncertainty dampens trade, corporate investment, and FDIs ([Gulen and Ion, 2016](#); [Choi, Furceri, and Yoon, 2020](#); [Wu, Zhang, Wu, and Kong, 2020](#)), and (ii) that this event largely reduced trade policy uncertainty between the US and China ([Pierce and Schott, 2016](#); [Handley and Limão, 2017](#)). Accordingly, we expect the firms that were the most exposed to trade policy uncertainty before the granting to invest more in China in response to the shock. If we believe that experience of managers truly affects companies' presence abroad, we also posit that

this reaction was stronger for firms having executives used to pilot multinational operations with China. Both predictions are validated with a subsample of enterprises in which the number of executives familiar with China stayed constant between 1995 and 2005.

The aforementioned exercises give credence to a causal effect. Five more exercises supplement the results to better understand how executive experience shapes multinational operations. In the first one, I explore whether executive experience has to be necessarily country-specific or if, on the opposite, experience in supervising operations with any foreign country can still help firms reach new markets. The results stand for the first proposition. Put otherwise, executives coming from corporations owning subsidiaries in Belgium do not spur their firm's FDIs in France or Germany. The second exercise allows for heterogeneous effects across executives. Because chief executive officers (CEOs), chief financial officers (CFOs), chief marketing officers (CMOs), and chief operating officers (COOs) are the highest-level executives and make the high-stake decisions, I conjecture that their experience plays a bigger role in firms' internationalization process. I find that country-specific experience of top C-level executives greatly contributes to FDIs. That of the remaining executives, by contrast, has no or little incidence. The third exercise examines whether the effect persists at the intensive margin. The results reflect a similar pattern on the number of subsidiaries abroad, conditional on having at least one subsidiary in the foreign country. Experienced executives thus help companies not only to penetrate new foreign countries but also to scale up their presence where they are already implanted. In the fourth exercise, I investigate if executives used to oversee multinational operations receive higher compensations. Statistical evidence points in this direction. Holding other things constant, FDI-related experience yields a 37 percent compensation premium. Firms consequently compete for this rare skill in a labor market with short supply ([Sauvagnat and Schivardi, 2020](#)). They invest in such executives as they expect higher returns in very specific foreign countries. The final exercise narrows the set of foreign countries and deals with the peculiar case of tax havens. Workhorse international trade theories predict that FDIs should be directed toward large and central countries ([Brainard, 1993](#); [Head and Mayer, 2004](#)). Yet, tax havens surprisingly concentrate a disproportionately high number of US-listed firms, despite their small size and remoteness ([Souillard, 2021](#)). This irregularity mainly stems from the tax-friendly environment that such jurisdictions offer, and the regression results show that the mechanism highlighted in the paper even applies to tax havens.

The findings complement the existing literature in two dimensions. They emphasize the influence of executives in the expansion of multinational corporations. Their experience is

a valuable asset and improves firm performance in international markets. In this regard, this paper is to the best of my knowledge the first to elucidate that only the country-specific experience of top executives matters for FDIs. Moreover, the findings reveal that executive mobility is one of the channels through which FDI-related knowledge propagates across firms. This is highly relevant from a policy perspective. In recent years for instance, corporate tax avoidance has become a salient topic. Multinationals have regularly been accused of large-scale tax planning and discussions have been taking place at the international level to limit their profit shifting activities. Against this background, the paper indicates that C-level executives tend to assimilate and replicate the tax dodging strategies of their firms. Therefore, inspecting movements of top executives across firms could be useful to predict companies' future use of tax havens. Devoting more resources to audit firms hiring top executives previously employed by enterprises involved in tax havens might possibly facilitate the fight of public authorities against aggressive tax planning.

The remainder of the paper is structured as follows. To begin with, section 2 reviews the related literature and situates the paper within this body of research. The ensuing sections are dedicated to the empirical analysis. Section 3 describes the construction of the database and the final sample. Section 4 lays out the econometric strategy, discusses the challenges associated with it, displays the main results, and assesses their robustness. Section 5 provides more insights into the role of executive experience in FDIs. Section 6 finally concludes.

2 Literature and contribution

2.1 Determinants of FDIs

The paper resonates with four distinct strands of research. An old line of inquiry examines the factors motivating FDIs. The importance 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. I refer to [Antràs and Yeaple \(2014\)](#) and [Blonigen and Piger \(2014\)](#) for surveys of these determinants. Nevertheless, most of the determinants hitherto uncovered are either country- or firm-specific. The present study takes advantage of rich data to open a black box and separate what comes from the firm and what comes from its executives. It demonstrates that the characteristics of top executives, and more precisely their experience, are essential to shaping business operations and the network

of multinational corporations. In addition, it is widely recognized that FDIs induce sunk costs (Helpman et al., 2004; Kimura and Kiyota, 2006; Greenaway and Kneller, 2007). Enterprises interested in setting up subsidiaries in foreign countries must incur the cost of market research, create new distribution networks, etc. To the extent that the venue of experienced executives boosts FDIs but their departure is not detrimental, the results suggest that executive experience reduces this sunk cost of FDIs. They unveil at the same time a new mechanism whereby FDI-related knowledge spills over across firms: top executives' mobility (Demena and van Bergeijk, 2017). Besides generating productivity gains (Balsvik, 2011), top executives arriving from other multinational companies assist firms in carrying out FDIs.²

2.2 Management and firm performance in international markets

A more recent stream of the literature shows that management practices affect firm performance in international markets. Among others, Parrotta, Pozzoli, and Sala (2016) and Marchal and Nedoncelle (2019) find evidence of an export-enhancing effect of ethnic diversity and immigrant workers. The effect, according to the authors, arises from the fact that ethnic diversity and immigrant workers enrich firms' relational capital, convey information on foreign markets, and increase firms' productivity.³ The papers of Mion and Opromolla (2014), Choquette and Meinen (2015), Sala and Yalcin (2015), Meinen, Parrotta, Sala, and Yalcin (2018), Mion, Opromolla, and Sforza (2019), and Lööf and Viklund-Ros (2020) are along the same lines and more closely related to the present paper as they focus on managers and directors. They argue that these individuals gain experience in exporting activities and nurture their current enterprise's exports to the countries they are familiar with.⁴ Lenoir and Patault (2019) go a step further. In the same spirit, they exploit French firm-to-firm export data to show that sales managers build buyer-specific knowledge and transmit this knowledge to the companies they join. The present article extends the preceding ones by looking at another dimension of firm performance in international markets, namely FDIs. Although several studies in international business and management already delve into the nexus between CEO experience, firm performance, and FDIs (Herrmann and Datta, 2006; Boermans and Roelfsema, 2013; Cui, Li, Meyer, and Li, 2015; Hamori and Koyuncu, 2015; Le and Kroll, 2017; Li and Patel, 2019), mine leverages a more disaggregated database. This improvement allows fine-tuning the iden-

2. It is worth bearing in mind that the effect quantified in this paper does not include the indirect impact of executive experience on FDIs passing through firm productivity. In a sense, the point estimates could then be seen as lower-bound estimates.

3. See Moriconi, Peri, and Pozzoli (2020) for comparable figures with firms' offshoring decisions.

4. Bisztray, Koren, and Szeidl (2018) uncovers a similar pattern with firm imports.

tification strategy and providing additional insights into the role played by executive experience. Notably, the paper is the first to outline that only country-specific experience of C-suite executives is pivotal.

2.3 Determinants of executive compensation

A literature explores the determinants of executives' compensations ([Gabaix and Landier, 2008](#); [Graham, Li, and Qiu, 2012](#)) and reports a wage gap between employees in multinational enterprises, exporting firms, and domestic firms ([Heyman, Sjöholm, and Tingvall, 2007](#); [Hijzen, Martins, Schank, and Upward, 2013](#); [Helpman, Itskhoki, Muendler, and Redding, 2017](#); [Schroeder, 2019](#)). The latter is referred to as the “multinational/exporter wage premium.” The present paper might lead us to a better understanding of the disparities in compensations across executives and the multinational wage premium. It indicates that experience in handling transnational affairs confers a compensation premium. By implication, the multinational wage premium can be inflated by the omission of one variable in the Mincer-type equations, FDI-related knowledge developed while working for multinational firms, which I find valuable in the labor market.

2.4 Determinants of profit shifting

Last but not least, this paper expands the literature on the determinants of profit shifting. There is a paucity of research investigating how executives drive corporate tax avoidance. In a seminal paper, [Dyreng, Hanlon, and Maydew \(2010\)](#) discover that, conditional on firms' characteristics, fixed characteristics of executives play a key role in aggressive tax planning. Follow-up studies highlight specific traits of managers and directors such as connection to a tax office ([Zhao, Meng, Taylor, and Richardson, 2021](#)), conservatism ([Christensen, Dhaliwal, Boivie, and Graffin, 2015](#)), foreign experience ([Wen, Cui, and Ke, 2020](#)), and narcissism ([Olsen and Stekelberg, 2016](#)). This paper underlines the effect of experience with tax havens. On the same note, it contributes to the flourishing literature analyzing how profit shifting strategies disseminate across firms ([Souillard, 2021](#)). Earlier work points out that tax avoidance practices spread 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 article especially echoes the one of [Barrios and Gallemore \(2019\)](#). They observe that firms avoid taxes to a larger degree when they hire employees coming from firms with relatively low cash effective tax rates.

In this paper, I concentrate on one of the most aggressive techniques of corporate tax avoidance, profit shifting and tax haven FDIs. More importantly, I elaborate on how executive mobility propagates tax dodging practices across firms. Armed with a unique dataset, I can disentangle time-variant and time-invariant characteristics of executives and control for a much wider set of confounders. I provide systematic evidence that these executives build, bring, and put their expertise in tax havens at the service of their firm.

3 Data

Three distinct sources are combined to form the firm-country-year level database. This section describes each of them as well as the final sample.

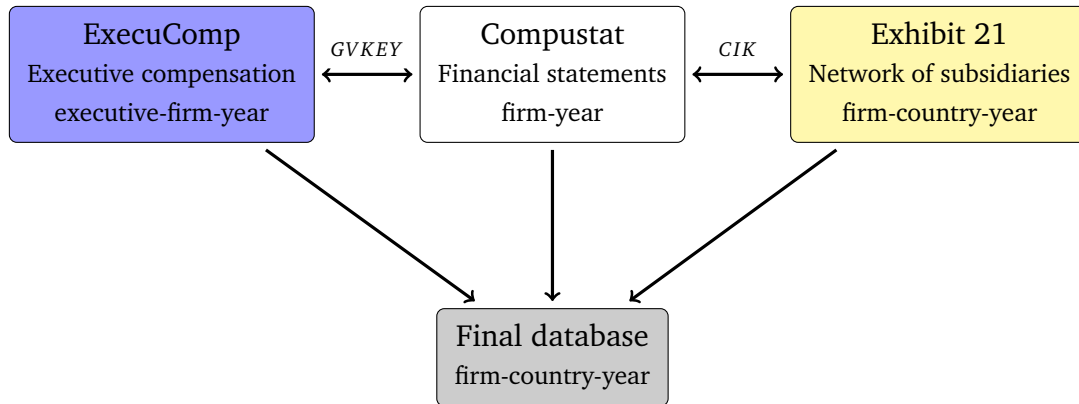
3.1 Data sources

Compustat Compustat North America contains extensive information on balance sheets (assets, liabilities, and equity), income statements (revenues, costs, and expenses), and cash flows of publicly listed companies in North America since 1950. The vast coverage and the richness of the information explain why Compustat is frequently used in the literature. Albeit representing a small share of all companies operating in the country, US-listed companies are the largest and most productive ones. They contribute 30 percent to total employment and 40 percent to aggregate sales ([Asker, Farre-Mensa, and Ljungqvist, 2014](#)). In addition, the international trade literature predicts that only large and productive companies engage in FDIs ([Helpman et al., 2004](#)). The fact that Compustat includes publicly listed companies thus proves particularly useful for the study because they are the most prone to undertake FDIs. Two variables are retained: the *GVKEY* and *CIK* identifiers. They allow connecting the two other databases on executives and subsidiaries (see figure 1). The financial data, on the other hand, are left aside as they will be absorbed in the econometric exercise by the firm-year fixed effects.

ExecuComp ExecuComp, as the name hints, gives background information (e.g., age, gender, and title) and comprehensive details about the compensation of executives (salary, bonuses, stock and option awards, non-equity incentive plans, pensions, and all other pay) in S&P 1500 firms starting from 1992.⁵ S&P 1500 firms encompass approximately 90 percent of US market capitalization. As a consequence, ExecuComp enables us to track

5. More precisely, ExecuComp encompasses, in addition to S&P 1500 firms, firms 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 index began in 1994 but some firms were tracked as of 1992.

FIGURE 1 – Construction of the database



executives over time and across the largest US-listed firms.

Exhibit 21 The third and last data source is used to retrieve information on US-listed firms' subsidiaries. I capitalize on the fact that all companies listed on a US stock exchange are required by the SEC to disclose their significant subsidiaries every year 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. Moreover, any subsidiary is significant if by combining all undisclosed subsidiaries into one fictive subsidiary, the latter exceeds 10 percent of assets or revenues.⁶ In other words, Exhibit 21 filings reflect where more than 90 percent of US-listed firms' assets and revenues are booked. They therefore draw an accurate picture of the worldwide network of S&P 1500 firms' subsidiaries at the firm-country-year level. The reports are publicly available on the EDGAR platform of the SEC and have been electronically filed since 1993, so the data can easily be obtained and extracted. As an example, figure 2 depicts a part of the list of subsidiaries enumerated by the firm Johnson & Johnson in 2012. I hereby exploit an updated version of the dataset produced by [Dyreng and Lindsey \(2009\)](#) that spans the 1993-2013 period. I abstract from non-significant subsidiaries due to data limitations.

6. Note that firms are not obliged to uncover financial information about their subsidiaries. Relatedly, although firms might have incentives not to expose 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 – Non-exhaustive list of the significant subsidiaries reported by Johnson & Johnson in Exhibit 21 filings in 2012

EX-21 5 ex21-subsidiariesxform10kk.htm SUBSIDIARIES

SUBSIDIARIES

EXHIBIT 21

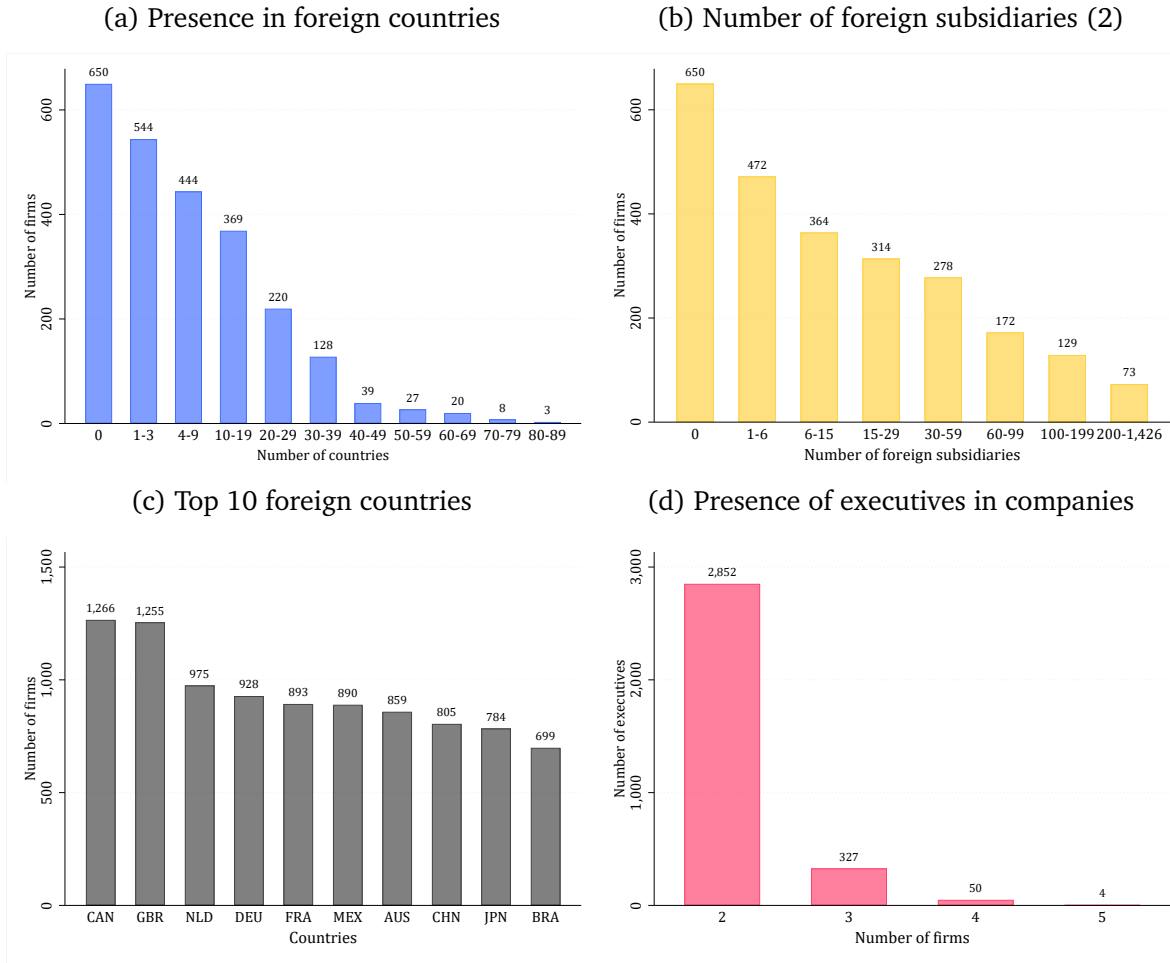
Johnson & Johnson, a New Jersey corporation, had the domestic and international subsidiaries shown below as of December 30, 2012. Certain U.S. subsidiaries and international subsidiaries are not named because they were not significant in the aggregate. Johnson & Johnson has no parent.

Name of Subsidiary	Jurisdiction of Organization
U.S. Subsidiaries:	
Accurant, Inc.	Delaware
ALZA Corporation	Delaware
Animas Corporation	Delaware
Biosense Webster, Inc.	California
CNA Development LLC	Delaware
Codman & Shurtleff, Inc.	New Jersey
Cordis Corporation	Florida
Cordis International Corporation	Delaware
Cordis LLC	Delaware
DePuy Mitek Holding Corporation	Delaware
DePuy Mitek, LLC	Massachusetts
DePuy Orthopaedics, Inc.	Indiana
Rutan Realty LLC	New Jersey
Scios Inc.	Delaware
SterilMed, Inc.	Minnesota
Synthes USA Products, LLC	Delaware
Synthes USA, LLC	Delaware
Synthes, Inc.	Delaware
The Anspach Effort, LLC	Florida
Wellness & Prevention, Inc.	Michigan
International Subsidiaries:	
Almaco Holding AG	Switzerland
Apsis	France
Apsis Germany GmbH	Germany
Beijing Dabao Cosmetics Co., Ltd.	China
Berna Biotech Korea Corporation	Korea, Republic of
Berna Rhein B.V.	Netherlands
Biosense Webster (Israel) Ltd.	Israel
Cilag Advanced Technologies GmbH	Switzerland
Cilag AG	Switzerland
Cilag GmbH International	Switzerland

TABLE 1 – List of foreign countries (3-digit ISO codes)

AFG, AGO, ALB, ARE, ARG, ARM, ASM, AUS, AUT, AZE, BDI, BEL, BEN, BFA, BGD, BGR, BIH, BLM, BLR, BOL, BRA, BRN, BWA, CAN, CCK, CHL, CHN, CIV, CMR, COD, COL, CUB, CXR, CZE, DEU, DJI, DNK, DOM, DZA, ECU, EGY, ERI, ESP, EST, ETH, FIN, FJI, FLK, FRA, FSM, GAB, GBR, GHA, GIN, GLP, GMB, GNQ, GRC, GRL, GTM, GUF, GUM, HMD, HND, HRV, HTI, HUN, IDN, IND, IRN, IRQ, ISL, ISR, ITA, JAM, JPN, KAZ, KEN, KGZ, KHM, KIR, KOR, KWT, LAO, LBY, LKA, LSO, LTU, LVA, MAR, MDA, MDG, MEX, MKD, MLI, MMR, MNG, MNP, MRT, MTQ, MWI, NAM, NCL, NER, NGA, NIC, NLD, NOR, NPL, NZL, OMN, PAK, PER, PHL, PLW, PNG, POL, PRI, PRT, PRY, PSE, PYF, QAT, REU, ROU, RUS, RWA, SAU, SDN, SEN, SGS, SLE, SLV, SOM, SPM, SRB, SUR, SVK, SVN, SWE, SWZ, SYR, TCD, TGO, THA, TJK, TKM, TLS, TON, TTO, TUN, TUR, TUV, TWN, TZA, UGA, UKR, UMI, URY, UVK, UZB, VEN, VNM, WLF, YEM, ZAF, ZMB, ZWE.

FIGURE 3 – Summary statistics



3.2 Sample and descriptive statistics

After merging the three databases, the final dataset is assembled at the firm-country-year level (see figure 1). The sample consists of 2,452 S&P 1500 firms. All reported at least one subsidiary at some point between 1993 and 2013, inside or outside the US. The main database covers 168 foreign countries (see table 1 for a list with their corresponding 3-digit ISO codes). Besides being foreign countries, they share the common trait of being non-haven countries. The original database comprises 218 foreign countries. However, 50 are categorized as tax havens (Hines and Rice, 1994; Dyreng and Lindsey, 2009) and the very specific case of tax havens will be treated in greater depth in a dedicated section at the end of the paper.

Figures 3a, 3b, and 3c display some summary statistics about firms' presence in foreign

countries. Out of 2,452 companies, 650 did not report a physical presence in any of the 168 foreign countries over the 1993-2013 period (see figure 3a). It means that at most one-quarter of firms are not multinational and supports the idea that listed firms concentrate a high share of multinational corporations. On average, the 1,802 multinational firms had 45 foreign subsidiaries spread across 13 distinct foreign countries. The histograms exhibited in figures 3a and 3b perfectly illustrate the skewness of the two distributions, with a very small share of multinational corporations having numerous subsidiaries registered in many foreign countries. Figure 3c orders the foreign countries according to their attractiveness. Unsurprisingly, Canada appears to be the foreign country where the highest number of firms were implanted. Almost 52 percent of the firms included in the sample declared a subsidiary at some point in this country. The United Kingdom (51 percent), the Netherlands (40 percent), Germany (38 percent), and France (36 percent) complete the top 5. It is worth noticing that all the countries in the top 10 are quite large and central. This ranking thus coincides with what standard international trade theories would posit (Brainard, 1993; Head and Mayer, 2004; Helpman et al., 2004).

Descriptive statistics on executives are visible in figure 3d. Only those linked to a minimum of two of the 2,452 firms are retained for the rest of the analysis. As for financial data in a prior paragraph, the elimination of executives linked to one single company is motivated by the fact that all their characteristics we can possibly control for will be integrated in some fixed effects. Hence, dropping these individuals reduces the dimension of the database at no cost. On average, the 3,233 executives preserved in the database worked for 2 firms and stayed for a period of 4 years and a half in each firm.

4 Executive experience and foreign subsidiaries: main results

This section assesses the effect of executive experience on the geographical spread of S&P 1500 companies, with a focus on the extensive margin of FDIs. I outline the identification strategy, comment the baseline results, gauge their robustness, and finally deal with endogeneity concerns.

4.1 Identification strategy

Equation (1) below is the core equation of this paper:

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

The dependent variable $FDI_{i,c,t}$ is a dummy variable equal to 1 if firm i has at least one subsidiary in country c in year t . On the right-hand side, $TREAT_{i,c,t}$ is the number of executives in firm i and year t who, before joining firm i , have worked for a firm that had at least one subsidiary in country c at the time. A battery of firm-year, country-year, and firm-country fixed effects neutralizes the effect of confounding factors. By definition, the firm-year fixed effects $\mu_{i,t}$ take into account time-variant and time-invariant firm-specific determinants of FDIs. They encompass (but are not limited to) firm productivity and firm size. The country-year fixed effects $\nu_{c,t}$ isolate labor costs, market size, fiscal incentives, and all the other time-variant and time-invariant country-specific features influencing FDIs of US-listed firms. The last set of fixed effects $\gamma_{i,c}$, defined at the firm-country level, absorb time-invariant firm-country variables affecting the probability of US-listed companies to establish subsidiaries in country c . The distance between the headquarters and country c is thus included. Importantly, the three-way fixed effects further capture fixed and (firm-)year-specific attributes of executives such as education, age, and within-firm experience. Therefore, $TREAT_{i,c,t}$ is purged of the effect of executives' characteristics not ascribable to former job experience.

In words, the coefficient of interest α translates the average effect of appointing an executive experienced with a particular foreign country on the firm's probability to own subsidiaries in this country. Its estimation requires executive mobility across firms. Take two firms i and i' with comparable global trends in FDIs, i.e., $\mu_{i,t} - \mu_{i,t-1} \approx \mu_{i',t} - \mu_{i',t-1}$. Further assume that i , unlike i' , hires an executive familiar with country c in year t . The identification relies on the hypothesis that the network of subsidiaries of the two companies in country c would have evolved in the same way between $t - 1$ and t in absence of the new hiring. Equivalently, take two similar foreign countries c and c' , so that $\nu_{c,t} - \nu_{c,t-1} \approx \nu_{c',t} - \nu_{c',t-1}$. It is assumed that FDIs of firm i in c and c' would have moved in parallel had there not been any change in the composition of executives.

TABLE 2 – Main results

Dependent variable	$FDI_{i,c,t}$
<i>Panel A: benchmark estimate</i>	
$TREAT_{i,c,t}$	0.023 ^a
<i>Panel B1: 30 random foreign countries</i>	
$TREAT_{i,c,t}$	0.026 ^a
<i>Panel B2: elimination of firms entering/exiting the sample</i>	
$TREAT_{i,c,t}$	0.027 ^a
<i>Panel B3: binary models</i>	
$TREAT_{i,c,t}$ (logit)	0.210 ^a
$TREAT_{i,c,t}$ (probit)	0.176 ^a
<i>Panel B4: 2003-2013 period</i>	
$TREAT_{i,c,t}$	0.018 ^a
<i>Panel B5: disentangling experience and origin</i>	
$TREAT_{i,c,t}$ (FamilySearch)	0.023 ^a
$origins_{i,c,t}$ (FamilySearch)	0.006 ^a
$TREAT_{i,c,t}$ (NamePrism)	0.023 ^a
$origins_{i,c,t}$ (NamePrism)	0.004 ^d
<i>Panel C1: three-year lag as an instrument</i>	
$TREAT_{i,c,t}$	0.036 ^b
<i>Panel C2: precipitated movements of executives as instruments</i>	
$TREAT_{i,c,t}$ (Factiva and official reports)	0.049 ^a
$TREAT_{i,c,t}$ (ExecuComp)	0.031 ^a
<i>Panel C3: PNTR as a quasi-natural experiment</i>	
$TPU_{i,j,t}$	0.289 ^a
$TREAT_i \times TPU_{i,j,t}$	0.585 ^d

Notes: This table displays the results for equation (1). Panel A displays the baseline results, panel B the results of the robustness checks, and panel C the results obtained after addressing endogeneity issues. Standard errors, not reported for space, are clustered at the firm-year level, except in panel C3 where they are clustered at the firm level. ^d $p < 0.15$, ^c $p < 0.10$, ^b $p < 0.05$, ^a $p < 0.01$. See section 4 for more details and Appendix tables AT1, AT3, and AT4 for full tables.

4.2 Baseline results

Table 2 panel A exhibits the regression results obtained with ordinary least squares (OLS). Consistent with anecdotal evidence, the coefficient is positive and highly statistically significant at the 1 percent level. On average, recruiting an executive who has FDI-related experience with a particular country is associated with a 2.3 percentage point increase in the probability to be present in this country. Put differently, the average value of the dependent variable being equal to 4.4 percent, the probability of being present in the

foreign country increases by approximately 52 percent ($= 0.023/0.044$) after the hiring, so the effect is potentially sizable.

Complementary regressions reported in Appendix table [AT2](#) examine whether the departure of experienced executives hastens firms' exit. The specification of equation (1) is slightly changed in all four columns. In column (1), $FDI_{i,c,t}$ is replaced 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 $FDI_{i,c,t-1} = 1$. In column (2), $TREAT_{i,c,t}$ is replaced with a dummy equal to 1 if $TREAT_{i,c,t} < TREAT_{i,c,t-1}$. $\hat{\alpha}$ is not significantly different from zero in both cases. Symmetrically and not surprisingly, substituting $FDI_{i,c,t}$ with a binary variable $ENTRY_{i,c,t}$ equal to 0 if $FDI_{i,c,t} = 0$ and 1 if $FDI_{i,c,t} = 1$ and $FDI_{i,c,t-1} = 0$ (column 3) or $TREAT_{i,c,t}$ with a dichotomous variable equal to 1 if $TREAT_{i,c,t} > TREAT_{i,c,t-1}$ (column 4) yields a positive and statistically significant $\hat{\alpha}$. It means that the arrival of experienced executives is associated with an increase in FDIs but departures, by contrast, have little incidence on FDIs. The asymmetry goes hand in hand with the notion that experienced executives reduce the sunk cost of FDIs.

4.3 Robustness

Outliers Four types of sensitivity checks evaluate the robustness of the benchmark results. A first series of tests explore whether the treatment effect is affected by outliers. Appendix figure [AF1](#) lays out the regression results obtained after removing one foreign country at a time. The 168 coefficients are extremely stable across regressions and suggest that they should not be driven by one particular country. Along the same lines, table [2](#) panel B1 reproduces the results based on 30 random foreign countries⁷ and the coefficient has the same order of magnitude. Panel B2, this time, eliminates firms instead of countries. Equation (1) is regressed without firms not operating over the entire time span (entering after 1993 and/or exiting before 2013) and the key finding holds. All in all, the tests substantiate that the effect is pervasive.

Estimation technique Table [2](#) panel B3 queries the pertinence of the estimation method. There is no consensus in the literature on the most appropriate estimator one should use when the dependent variable is dichotomous ([Horrace and Oaxaca, 2006](#); [Angrist and Pischke, 2009](#); [Battey, Cox, and Jackson, 2019](#); [Gomila, 2020](#)). On the one hand, linear probability models are popular due to their simplicity and transparency, although it has

7. These countries are: AFG, AGO, ARE, AUS, BDI, CHL, CHN, CIV, DZA, EST, GLP, GRC, GTM, GUF, GUM, HMD, IDN, LVA, MLI, NER, NOR, PHL, PLW, SUR, SWZ, TGO, TON, URY, VNM, and YEM (3-digit ISO codes).

been raised that OLS estimates in the case of a binary outcome are 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. I overcome the latter problem building on [Hinz, Stammann, and Wanner \(2020\)](#). 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 equation (1). Table 2 panel B3 applies the correction in logit and probit estimations. The coefficients remain positive and statistically significant in the two cases and certify that the findings are not influenced by the estimation method.

Measurement errors Table 2 panel B4 addresses a measurement issue. Owing to data limitations, it is impossible to track executives prior to 1992 and foreign subsidiaries before 1993. Therefore, an implicit assumption is that executives have no FDI experience in the first year of the sample, i.e., 1993. Note that it could work against the benchmark results. Doing so involves incorrectly assigning treated firm-country-year observations to the non-treated sample, thereby compressing the FDI gap between non-treated and treated triplets. To verify that the error does not contaminate the results, I replicate the analysis after ruling out the first ten years for the regression. This leaves a ten-year window period during which executives move across firms and acquire (measurable) experience. Again, the coefficient is in line with the baseline one, both in terms of magnitude and statistical significance.

Disentangling experience and origin Another caveat is that the treatment variable could partly express the effect of executives' origin. The fact that executives in the database oversaw operations with diverse foreign countries maximizes the chance of capturing experience rather than origin; and while there is no precise information on origin, it is reasonable to consider that international business activities necessitate certain skills that origin does not automatically provide. To cope with this problem and infer the origin of executives, I scrape data from the largest collection of family history, family tree, and genealogy records, *FamilySearch*, and match surnames to a country of origin accordingly. The information is then inserted into equation (1) with a variable called $origins_{i,c,t}$ equal to the number of executives in firm i and year t whose name is linked to country c . The results in panel B5 confirm the benchmark ones. They also confirm that origin, despite being relevant, contributes to FDIs to a lesser extent. An alternative approach hinges on *NamePrism*. *NamePrism* is a non-commercial nationality classification web service based on machine learning algorithms. The correlation coefficient between the two distinct

$origins_{i,c,t}$ variables is equal to 0.423, meaning that the two matching methodologies produce a mix of common and uncommon results. Still, the regression results obtained by using *NamePrism* resemble and consolidate those obtained with *FamilySearch*.

4.4 Endogeneity

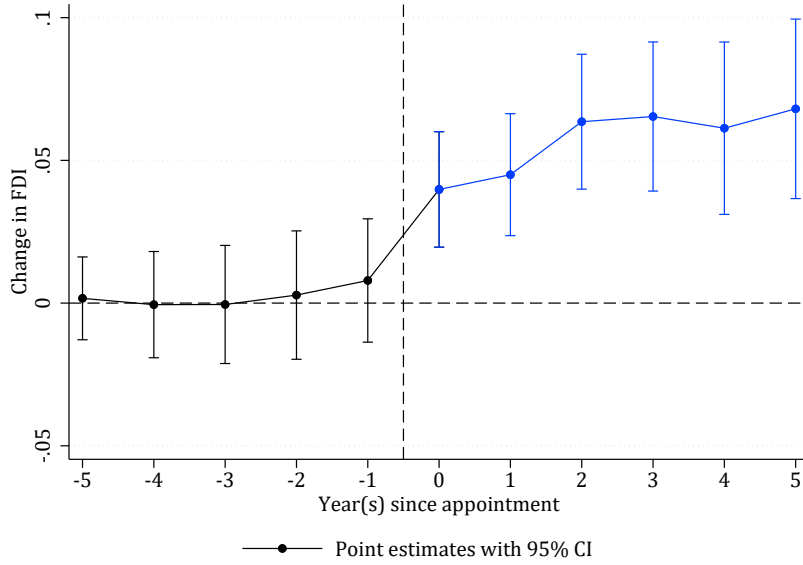
The previous subsections establish a strong relationship between executive experience and FDIs. A concern not mentioned thus far, however, pertains to endogeneity. The results above could be plagued by endogeneity for a variety of reasons. One is reverse causality: Entry (decision) in foreign countries might precede the recruitment of experienced executives. Another source is omitted variables. Notwithstanding the introduction of three-way fixed effects, firms may undertake unobservable firm-country-year investments to reach foreign markets and the treatment variable could capture their effect. In any case, the results above suffice to highlight the relevance of executive experience and endogeneity should not be seen as major threat. Companies strategically select their executives, so the fact that the venue of experienced executives coincides with an international expansion suggests that executive experience matters for firm performance in foreign markets. Also, we will see in the next section that experience with multinational operations enhances executive pay. It means that firms pay a premium for this asset precisely because they expect performance gains and higher returns. All the same, I carry out hereafter four complementary exercises that support the existence of a causal effect.

Placebo test The first exercise consists of a placebo test. To verify that the baseline results do not derive from the existence of pre-trends and past unobserved firm-country-year shocks, I inspect variations in the explanatory variable around the year of the treatment:

$$FDI_{i,c,t} = \alpha TREAT_{i,c,t} + \sum_{k=1}^5 \beta_k TREAT_{i,c,t}^{t+k} + \sum_{k=1}^5 \zeta_k TREAT_{i,c,t}^{t-k} + \mu_{i,t} + \nu_{c,t} + \gamma_{i,c} + \epsilon_{i,c,t} \quad (2)$$

$TREAT_{i,c,t}^{t+k}$ is a variable equal in year t to the number of executives in firm i and year $t+k$ having experience with country c . If the $\hat{\beta}$ coefficients are not statistically different from zero, then the stock of experienced executives is uncorrelated with future FDIs and $\hat{\alpha}$ is unlikely to mirror the effect of past firm-country-year unobserved shocks. 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 expresses the immediate effect of the hiring, $\alpha + \zeta_1$ the total effect after one year, $\alpha + \zeta_1 + \zeta_2$ the total effect after two years, and so on. Figure 4 plots the results of the

FIGURE 4 – Dynamics of the effect



Notes: This figure depicts the regression results of equation (2). Standard errors are clustered at the firm-year level. See section 4 for more details.

regression. The $-j$ coefficients ($j \in \{1, \dots, 5\}$) represent the estimated $\hat{\beta}$. Reassuringly, none of them is significantly different from zero at standard levels. The j coefficients ($j \in \{1, \dots, 5\}$) visualize the estimated $\hat{\alpha} + \sum_{k=1}^j \hat{\zeta}_k$. The graph indicates that the effect immediately kicks in, progresses over time, increases by half after three years, and finally stabilizes.

Instrumental variables The previous paragraph proves that the coefficient of interest α should not reflect the effect of past and unobserved firm-country-year shocks. Quid of contemporaneous shocks? An option to limit their incidence is to instrument $TREAT_{i,c,t}$ with its three-year lagged value $TREAT_{i,c,t-3}$, as in Mion and Opromolla (2014). The authors claim that a three-year period is sufficient for past shocks not to affect current exporting activities, and figure 4 implies that executive experience does not bring additional value after three years. Hence, I formulate an analogous hypothesis in the present paper and provide the results obtained with two-stage least squares (2SLS) in table 2 panel C1. The F-statistic in the first stage, equal to 196, attests that the instrument has power and satisfies the rank condition (Stock and Yogo, 2005). The second-stage result remains positive and statistically significant at the 5 percent level. Note that because the 2SLS point estimate is larger than the OLS one, the OLS regression might eventually minimize the effect of executive experience on FDIs.

Precipitated executive mobility A different strategy to extract exogenous variations in $TREAT_{i,c,t}$ is to investigate the causes of executive mobility. Multiple reasons can lie behind movements of employees across firms. Companies hire managers strategically and, ideally, would take their time to select the best fit. A typical example is when they poach the best executives from their peers. However, they sometimes have to replace former executives against their will or urgently after an unanticipated event. I conjecture that endogeneity is less plausible under such circumstances. As S&P firms are the largest ones, it is possible to recover some information about executive movements by collecting and scrutinizing press releases, newspapers, and newswires (with Factiva) as well as official reports. I do it manually for each inflow and outflow of executives to understand as precisely as possible the nature of each movement. I code the following events as sources of exogenous variations in $TREAT_{i,c,t}$: deaths, abrupt resignations, retirements, early layoffs, and resignations and layoffs subsequent to legal investigations. The aim is to retain movements triggered by unexpected incidents or initiated by executives themselves, and to leave aside movements well-prepared by firms. For example, if executive e working 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. Details and concrete examples are attached in the Online Appendix. I instrument $TREAT_{i,c,t}$ with a new variable $TREAT_{i,c,t}^{sudden}$ equal to 0 in the first year and then to:

$$\text{with } TREAT_{i,c,t}^{sudden} = TREAT_{i,c,t-1}^{sudden} + \mathbb{1}_{i,t} (TREAT_{i,c,t} - TREAT_{i,c,t-1})$$

$\mathbb{1}_{i,t}$ is a dummy variable equal to 1 if firm i is affected by an exogenous shock in years $t-1$ or t , as defined above. $\hat{\alpha}$, in table 2 panel C2, remains positive and statistically significant at the 1 percent level (first-stage F-stat equal to 1,242). Triangulating data sources delivers the same conclusion. In a supplementary regression, $\mathbb{1}_{i,t}$ is defined not based on publicly available information but on the (sparse) information contained in ExecuComp about resignations and retirements. The corresponding $\hat{\alpha}$ stays positive and significant.

Conferral of PNTR Table 2 panel C3 exploits the granting of Permanent Normal Trade Relations status on China in 2000. US imports from non-market economies are generally subject to non-normal-trade-relations tariff rates (NNTR), which are higher than normal-trade-relations tariff rates (NTR, or equivalently most-favored-nation tariff rates). Since the US Trade Act of 1974, US Presidents can grant NTR tariff rates to some non-market economies on an annual basis and upon approval from the US Congress. That is the reason why exports from China to the US were subject to NTR rates between 1980 and 2000, even though China was still considered as a non-market economy at that time. The renewal was quite automatic in the 1980s (Pierce and Schott, 2016). Nevertheless, the

military assault led by the Chinese government on the pro-democracy protesters in Tiananmen Square in 1989 marked a turning point. In 1990, 1991, and 1992 for instance, the House of Representatives voted against the renewal of the status. More generally, public opinion became hostile toward China. Gallup surveys reveal that while 13 percent of Americans had a very or mostly unfavorable view of China months before the Tiananmen protests, this proportion then soared and stayed above 50 percent throughout the 1990s.⁸ Other polls suggest that public opinion wanted the US to put more pressure on China and vigorously opposed Bush's conception of Sino-American relations (Skidmore and Gates, 1997). As a consequence, future tariffs were uncertain, and this uncertainty hindered China-US trade flows. The conferral of PNTR status in October 2000, quick and unanticipated,⁹ 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. In parallel, Gulen and Ion (2016), Choi et al. (2020), and Wu et al. (2020) find that policy uncertainty stifles corporate investments and FDIs. Two hypotheses can thus be formulated. First, we expect the granting to boost US FDIs in China, especially in the sectors that were the most exposed to trade policy uncertainty. Second, if managers significantly contribute to firms' FDIs, the increase in FDIs should be most striking in firms endowed with experienced executives. To test both assumptions, I measure trade policy uncertainty as the gap between NNTR and NTR tariff rates at the industry level (Pierce and Schott, 2016). Most of its variation stems from NNTR tariff rates. As they were set by the Smoot-Hawley Tariff Act seventy years earlier, in 1930, the treatment variable is plausibly exogenous. Next, I proceed with a triple-difference equation:

$$FDI_{i,t} = \alpha TREAT_i \times TPU_{i,j,t} + \beta TPU_{i,j,t} + \mu_i + v_t + \epsilon_{i,t} \quad (3)$$

$$\text{with } TPU_{i,j,t} = \mathbb{1}_{t \geq 2001} (NNTR_{i,j,1999} - NTR_{i,j,1999})$$

$FDI_{i,t}$ is a binary variable indicating whether firm i has at least one subsidiary in China in year t . $TREAT_i$ is the number of executives in firm i experienced in managing operations with China. Note the absence of a time index t . The regression is run between 1995 and 2005 only with firms where the number of executives used to handling activities with China is fixed over the period to eliminate the possibility that firms hire executives and expand simultaneously. $TPU_{i,j,t}$ is the treatment variable. It is equal to 0 from 1995 to 2000. As of 2001, this variable is the gap between the NNTR and NTR tariff rates in 1999

8. See: <https://news.gallup.com/poll/1627/china.aspx>.

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

in industry j in which firm i mainly operates.¹⁰ The identifying assumption for equation (3) is that, all else equal and in absence of the shock, FDIs in China would have evolved in the same way for all firms. The estimation results in table 2 panel C3 corroborate our two predictions. The granting eased FDIs of US-listed firms in China ($\hat{\beta} > 0$) and the pattern is more remarkable for firms employing executives experienced with China ($\hat{\alpha} > 0$). A robustness check similar to the one in figure 4 ensures that the results cannot be attributed to pre-existing trends in FDIs. Once added into the right-hand side variables, the leading values of $TPU_{i,j,t}$ in equation (3) are not statistically different from zero at the 5 percent level (see Appendix figure AF2).

Altogether, the placebo test, the two-stage least squares regressions, and the identification strategy leaning on the PNTR episode lend credence to a positive and causal effect of executive experience on FDIs.

5 Executive experience and foreign subsidiaries: additional results

The effect highlighted in section 4 naturally raises questions, such as: Does FDI knowledge have to be country-specific to help firms penetrate new markets? Is the effect heterogeneous across executives? Does the effect hold at the intensive margin? Does multinational experience translate into higher compensations? I tackle these questions in this section. Then, I address the specific case of tax havens and discuss the policy-relevant implications regarding corporate tax avoidance.

5.1 Country-specific knowledge?

We have seen that executives used to oversee operations with a particular foreign country facilitate firm entry in this country. Nonetheless, the baseline econometric model cannot say whether they stimulate FDIs in other foreign countries too. In equation (1), the firm-year fixed effects $\mu_{i,t}$ comprise the impact of all year-specific characteristics of executives, inclusive of their experience in managing multinational operations broadly defined. To explore this further, I replace the firm-year fixed effects $\mu_{i,t}$ with firm fixed effects μ_i and

10. Sectors are defined at the 4-digit SIC level and information on NNTR and NTR tariff rates is available just for manufacturing sectors. Hence, only firms mainly operating in manufacturing are retained for equation (3).

estimate:

$$FDI_{i,c,t} = \alpha TREAT_{i,c,t} + \alpha^{global} TREAT_{i,t}^{global} + \mu_i + v_{c,t} + \gamma_{i,c} + \epsilon_{i,c,t} \quad (4)$$

$TREAT_{i,t}^{global}$ is a binary variable equal to 1 if firm i has in year t at least one executive with multinational experience. It follows that:

$$\begin{aligned} \alpha^{global} &= \mathbb{E}(FDI_{i,c,t} / \mu_i, v_{c,t}, \gamma_{i,c}, TREAT_{i,c,t} = 0, TREAT_{i,t}^{global} = 1) \\ &\quad - \mathbb{E}(FDI_{i,c,t} / \mu_i, v_{c,t}, \gamma_{i,c}, TREAT_{i,c,t} = 0, TREAT_{i,t}^{global} = 0) \end{aligned}$$

α^{global} symbolizes the average effect on the probability to own subsidiaries in country c of having executives familiar with any other foreign country. Its estimation requires variation in $TREAT_{i,t}^{global}$ within firms over time, and across non-treated triplets (i.e., $TREAT_{i,c,t} = 0$). Now, the identifying assumption is that in absence of executives familiar with multinational activities, the network of subsidiaries of firms actually employing experienced executives and the one of firms employing no experienced executives would have evolved in a comparable way. Table 3 panel A1 reports the results. $\hat{\alpha}$ concurs with the previous point estimates. More interestingly, $\hat{\alpha}^{global}$ is very low, meaning that general experience with global firms has little incidence and only market-specific knowledge bolsters entry in foreign countries. Replacing the dummy $TREAT_{i,t}^{global}$ by the total number of executives experienced in multinational operations $TREAT_{i,t}^{global'}$ slightly modifies the interpretation of α^{global} but confirms the findings. The untabulated $\hat{\alpha}^{global'}$, whose order of magnitude can be directly compared to $\hat{\alpha}$ in this case, is negligible (1.001e-4, significant at the 1 percent level). A finer exercise visible in panel A2 introduces $TREAT_{i,c,t}^{continent}$. The variable counts the number of executives experienced with foreign countries located in the same continent as country c . The point estimate is four times larger than the one associated with $TREAT_{i,t}^{global'}$. However, our main conclusion is unchanged. Therefore, only country-specific experience really matters when it comes to establishing a physical presence in foreign countries.

5.2 Heterogeneous effects across occupations

The effect of executive experience on FDIs interacts with geography. Experience with the targeted country is decisive, experience with a neighboring country has a much smaller impact, and experience with a more distant country plays almost no role. Does the effect also depend on the function of executives within firms? Insofar as C-level executives “set the tone at the top,” I posit a more pronounced effect for top executives. Equation (5)

TABLE 3 – Additional results

Dependent variable	$FDI_{i,c,t}$
Panel A1: global experience in multinational activities	
$TREAT_{i,c,t}$	0.025 ^a
$TREAT_{i,t}$	0.002 ^b
Panel A2: experience in multinational activities with other countries from the same continent	
$TREAT_{i,c,t}$	0.022 ^a
$TREAT_{i,c,t}^{continent}$	4.569e-4 ^a
Panel B: CEOs/CFOs/CMOs/COOs and the rest of executives	
$TREAT_{i,c,t}$	0.011
$TREAT_{i,c,t}^{TE}$	0.029 ^a
Panel C: intensive margin	
$TREAT_{i,c,t}$ (OLS)	0.178 ^b
$TREAT_{i,c,t}$ (PPML)	0.023 ^b
Panel D: tax havens	
$TREAT_{i,c,t}$ (50 tax havens)	0.026 ^a
$TREAT_{i,c,t}$ (44 tax havens)	0.022 ^a

Notes: ^d $p < 0.15$, ^c $p < 0.10$, ^b $p < 0.05$, ^a $p < 0.01$. See section 5 for more details and Appendix table A5 for a full table.

tests the empirical validity of this conjecture:

$$FDI_{i,c,t} = \alpha TREAT_{i,c,t} + \alpha^{TE} TREAT_{i,c,t}^{TE} + \mu_{i,t} + \nu_{c,t} + \gamma_{i,c} + \epsilon_{i,c,t} \quad (5)$$

The triple-difference equation allows for heterogeneous effects by separating CEOs, CFOs, CMOs, and COOs from the rest. $TREAT_{i,c,t}^{TE}$ 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. The results outlined in table 3 panel B suggest that the average effect estimated so far is indeed driven by top C-level executives. While experience of top executives significantly enhances firms' probability to be implanted in the countries they have previously operated with, the experience of other executives, on the opposite, has limited influence on the location choices of multinational corporations.

5.3 Intensive margin of FDIs

Throughout the analysis, firm presence overseas has been analyzed at the extensive margin. To supplement the benchmark results, table 3 panel C contains the estimation results

of an equation akin to equation (1) where the dependent variable $FDI_{i,c,t}$ denotes the number of subsidiaries owned by firm i in country c in year t . The regression is run conditional on having at least one subsidiary in the given country and given year so that $\hat{\alpha}$ does not mirror a mix of extensive- and intensive-margin effects. $\hat{\alpha}$ is again positive and statistically significant at standard levels. In addition, the effect holds irrespective of the estimation methodology, by using OLS or pseudo-poisson maximum likelihood (PPML). Note that, in the latter case, we need not apply a correction for the incidental parameter problem. 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 drastically decreases as either the number of firms or periods increases. Besides fostering firm entry in foreign country, executive experience thus also accelerates the expansion of multinational companies where they are already present.

5.4 Executive pay and multinational experience

Executives are in short supply (Sauvagnat and Schivardi, 2020) and their experience with multinational activities greatly strengthens firm growth in international markets. Moreover, their knowledge must be country-specific to be determinant. As a consequence, companies presumably compete in the labor market for this skill and award a compensation premium for experienced executives. Descriptive evidence goes along these lines. Appendix figure AF3 depicts the distribution of compensations for executives with and without FDI experience. The data used for its construction come from ExecuComp. They give a faithful picture of executives' compensations as they cover bonuses, stock and option awards, non-equity incentive plans, and all other pay, which generally exceed salaries.¹¹ The graph shows that experienced executives receive a higher compensation on average. Mincer-type equation (6) digs into this with a more systematic methodology. On the left-hand side, $compensation_{e,i,t}$ is the compensation of executive e working for firm i in year t . On the right-hand side, $FDI\ experience_{e,i,t}$ is the variable of interest. It is a binary variable equal to 1 if executive e has worked for a multinational enterprise before joining firm i . Control variables include executives' age ($age_{e,t}$), within-firm experience ($firm\ experience_{e,i,t}$), CEO and CFO dummies ($CEO_{e,i,t}$ and $CFO_{e,i,t}$), and a battery of executive and firm-year fixed effects. The latter capture constant characteristics of exe-

11. As is common practice in the literature (Gabaix and Landier, 2008; Chhaochharia and Grinstein, 2009; Faulkender and Yang, 2010; Graham et al., 2012), the variable used for compensations corresponds to the variable labeled *TDC1* in ExecuComp. Note that its calculation changed in 2006, after the promulgation of Financial Accounting Statement (FAS) 123R. Pre- and post-2006 values are standardized following Gabaix, Landier, and Sauvagnat (2014).

cutives, systematic differences in compensations across firms, as well as global trends in compensations and transitory shocks.

$$\ln(\text{compensation}_{e,i,t}) = \kappa \text{FDI experience}_{e,i,t} + \lambda \text{age}_{e,t} + \iota \text{firm experience}_{e,i,t} + \delta \text{CEO}_{e,i,t} + \eta \text{CFO}_{e,i,t} + \nu_e + \omega_{i,t} + u_{e,i,t} \quad (6)$$

The regression results in Appendix table AT6 validate that FDI-related experience is a valuable asset in the labor market. $\hat{\kappa}$ is equal to 0.374 and significant at the 1 percent level. In words, experience with multinational activities is associated with a 37.4 percent compensation premium.

5.5 Entry in tax havens and profit shifting

Before concluding, I examine whether the same pattern can be observed for tax havens. Typical models from the international trade literature predict that firms should invest in large and central countries. Tax havens belie these theories. Albeit small and isolated, they attract a sizable amount of FDIs. This is because some multinational corporations open subsidiaries in tax havens to artificially deflate the profits booked in high-tax countries and avoid taxes (Beer, de Mooij, and Liu, 2020). The factors prompting multinationals to engage in profit shifting have received growing attention lately (Alm, 2019; Wang, Xu, Sun, and Cullinan, 2020). Yet, the importance of executive experience has largely been neglected, notwithstanding vast anecdotal evidence.¹² Table 3 panel D verifies that the mechanism exposed in the present paper still applies to tax havens, i.e., that executives assimilate and replicate the tax dodging schemes of their former firms. The first regression employs the classifications of tax havens proposed by Hines and Rice (1994) and Dyreng and Lindsey (2009), both prevalent in the corporate tax avoidance literature. 50 foreign countries are considered as tax havens accordingly.¹³ The second regression excludes six jurisdictions: Hong Kong, Ireland, Luxembourg, Malaysia, Singapur, and Switzerland. All six are relatively large and central. Therefore, FDIs of US-listed in these countries might have nothing to do with tax avoidance in the first place. On the contrary, FDIs in

12. Wal-Mart is a famous example. 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 Thomas Schoewe was appointed in 2000 as CFO. 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).

13. The 50 tax havens are: ABW, AIA, AND, ANT, ATG, BHR, BHS, BLZ, BMU, BRB, CHE, COK, CRI, CYM, CYP, DMA, GGY, GIB, GRD, HKG, IMN, IRL, JEY, JOR, KNA, LBN, LBR, LCA, LIE, LUX, MAC, MAF, MCO, MDV, MHL, MLT, MSR, MUS, MYS, NIU, NRU, PAN, SGP, SMR, SYC, TCA, VCT, VGB, VUT, WSM (3-digit ISO codes).

small and remote islands in the likes of Bahamas and Jersey are more likely to be fully motivated by tax purposes and to fall within the sole scope of profit shifting. The two results are consistent and unveil a new mechanism whereby profit shifting practices diffuse across multinational enterprises ([Souillard, 2021](#)). They also carry policy implications. Aggressive tax planning has been under the glare of public spotlight in a period characterized by numerous tax scandals, persistent budget deficits, rising inequalities, and the covid-19 pandemic. In this context, public authorities seek to curb profit shifting and thereby increase tax revenues. The Base Erosion and Profit Shifting (BEPS) initiative led by the Organisation for Economic Cooperation and Development (OECD) and G20 perfectly illustrates the salience of the issue. Against this background, the findings suggest that scanning movements of executives could be useful to anticipate and better detect firms' use of tax havens.

6 Conclusion

The determinants of FDIs are mostly country- or firm-specific in the existing literature. The present paper takes a step further and opens the black box representation of the firm. It clarifies the role of employees and more precisely the role of executives' experience with multinational operations. To this end, I pool three micro-level databases together. They provide rich information on financial statements, executives, and foreign subsidiaries of S&P 1500 enterprises. They notably allow retrieving their number of subsidiaries in each foreign country and each year as well as the number of executives having previously worked with each foreign country. Armed with these data, I then show that executives acquire expertise in multinational activities that helps companies spread worldwide. All other things being equal, a firm is more likely to be implanted in the countries that its executives have already worked with before joining. The pattern holds at the extensive and intensive margins. Moreover, the results indicate that only country-specific experience of top executives fosters FDIs and that experience in multinational business translates into higher compensations. These findings are validated by multiple sensitivity tests and confirm that firms hire experienced top executives precisely to enlarge their network of subsidiaries in certain targeted countries.

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Appendix

TABLE AT1 – Benchmark estimate: full table

Dependent variable	$FDI_{i,c,t}$
$TREAT_{i,c,t}$	0.023 ^a (0.003)
Average probability	0.044
Firm-year FEs	Yes
Country-year FEs	Yes
Firm-country FEs	Yes
R ²	0.766
No. of obs.	3,138,408

Notes: This table reports the benchmark regression results of equation (1). They correspond to table 2 panel A. The standard error, in parentheses, is clustered at the firm-year level. ^a $p < 0.01$. See section 4 for more details.

TABLE AT2 – The asymmetric effect of executive experience on FDIs

Column	(1)	(2)	(3)	(4)
	Exit		Entry	
Dependent variable	$EXIT_{i,c,t}$	$FDI_{i,c,t}$	$ENTRY_{i,c,t}$	$FDI_{i,c,t}$
$TREAT_{i,c,t}$	-0.005 (0.004)	0.013 (0.068)	0.009 ^a (0.002)	0.020 ^a (0.005)
Firm-year FEs	Yes	Yes	Yes	Yes
Country-year FEs	Yes	Yes	Yes	Yes
Firm-country FEs	Yes	Yes	Yes	Yes
R ²	0.680	0.766	0.302	0.766
No. of obs.	146,470	3,138,408	3,015,179	3,138,408

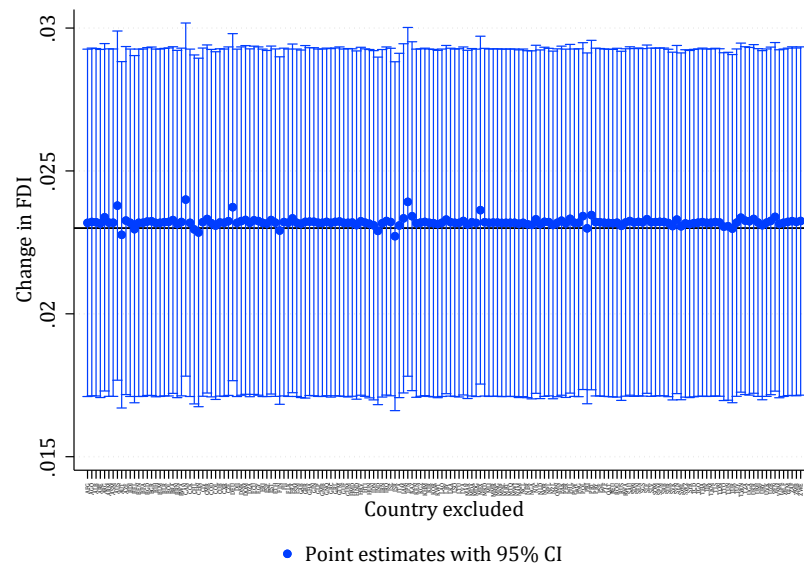
Notes: This table reports the regression results of equation (1), slightly modified to compare the effect of executive experience on entries and exits. Standard errors, in parentheses, are clustered at the firm-year level. ^d $p < 0.15$, ^c $p < 0.10$, ^b $p < 0.05$, ^a $p < 0.01$. See section 4 for more details.

TABLE AT3 – Robustness checks: full table

Panel	B1	B2	B3 (logit)	B3 (probit)	B4	B5 (FS)	B5 (NP)
Dependent variable	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,c,t}$
$TREAT_{i,c,t}$	0.026 ^a (0.004)	0.053 ^a (0.009)	0.210 ^a (0.046)	0.176 ^a (0.009)	0.018 ^a (0.004)	0.023 ^a (0.003)	0.023 ^a (0.003)
$origins_{i,c,t}$						0.006 ^a (0.002)	0.004 ^d (0.002)
Firm-year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R ² (for OLS regressions)	0.758	0.711			0.833	0.766	0.766
No. of obs.	560,430	194,040	145,105	145,105	1,881,768	3,138,408	3,138,408

Notes: This table evaluates the robustness of the benchmark estimate in table 2 panel A. They correspond to the results provided in table 2 panel B. 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.

FIGURE AF1 – Robustness check: dropping one country at a time



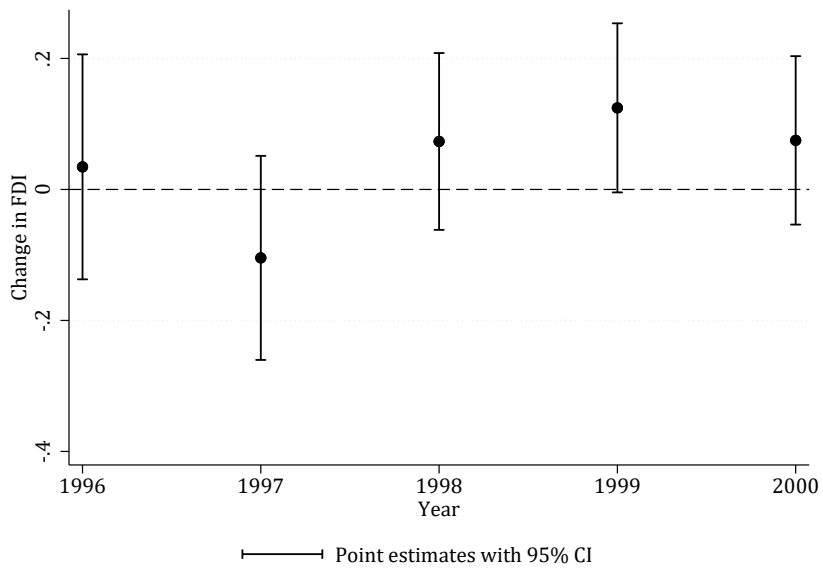
Notes: This figure depicts the regression results of equation (1) after removing one country at a time. The black line represents the benchmark estimate given in table 2 panel A. Standard errors are clustered at the firm-year level. See section 4 for more details.

TABLE AT4 – Endogeneity: full table

Panel	C1	C2 (Factiva/reports)	C2 (ExecuComp)	C3
Dependent variable	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,t}$
$TREAT_{i,c,t}$	0.036 ^b (0.018)	0.049 ^a (0.011)	0.031 ^a (0.004)	
$TPU_{i,j,t}$				0.289 ^a (0.081)
$TREAT_i \times TPU_{i,j,t}$				0.585 ^d (0.411)
Firm-year FEs	Yes	Yes	Yes	No
Country-year FEs	Yes	Yes	Yes	No
Firm-country FEs	Yes	Yes	Yes	No
Firm FEs	No	No	No	Yes
Year FEs	No	No	No	Yes
First-stage F-stat	195.868	1,242.348	2.2e5	
R ² (for OLS regressions)				0.736
No. of obs.	1,886,808	3,138,408	3,138,408	4,302

Notes: This table evaluates the robustness of the benchmark estimate in table 2 panel A. They correspond to the results provided in table 2 panel C. Standard errors, in parentheses, are clustered at the firm-year level, except in panel C3 where they are clustered at the firm level. ^d $p < 0.15$, ^c $p < 0.10$, ^b $p < 0.05$, ^a $p < 0.01$. See section 4 for more details.

FIGURE AF2 – Endogeneity: PNTR and pre-existing trends



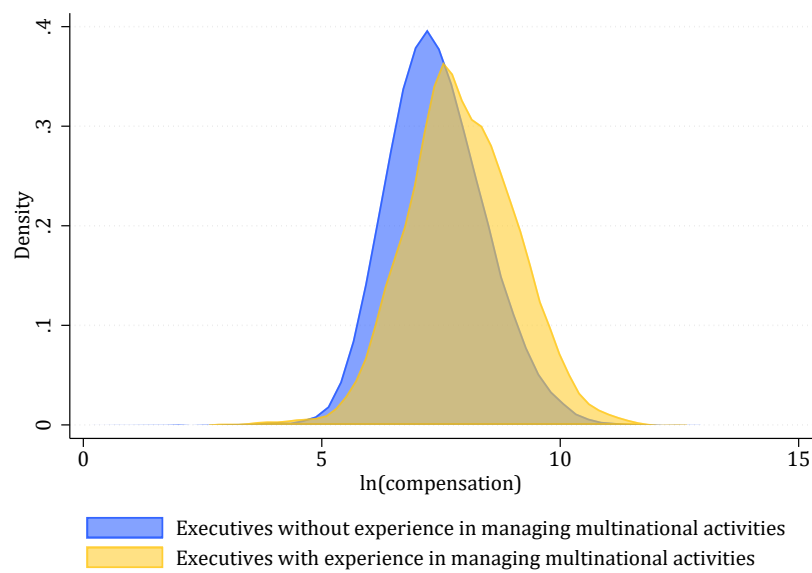
Notes: This figure depicts the regression results of equation (3) after including leading values of the treatment variable $TPU_{i,j,t}$ for $t \in \{1996, 1997, 1998, 1999, 2000\}$. Standard errors are clustered at the firm level. See section 4 for more details.

TABLE AT5 – Additional results: full table

Panel	A1	A2	B	C (OLS)	C (PPML)	D (50 TH)	D (44 TH)
Dependent variable	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,c,t}$	$FDI_{i,c,t}$
$TREAT_{i,c,t}$	0.025 ^a (0.004)	0.022 ^a (0.003)	0.011 (0.009)	0.178 ^b (0.087)	0.023 ^b (0.009)	0.026 ^a (0.003)	0.022 ^a (0.004)
$TREAT_{i,t}$	0.002 ^b (0.001)						
$TREAT_{i,c,t}^{continent}$		4.569e-4 ^a (1.210e-4)					
$TREAT_{i,c,t}^{TE}$			0.029 (0.005)				
Firm FEs	Yes	No	No	No	No	No	No
Firm-year FEs	No	Yes	Yes	Yes	Yes	Yes	Yes
Country-year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R ² (for OLS regressions)	0.748	0.766	0.764	0.786		0.734	0.690
No. of obs.	3,138,408	3,119,727	3,138,408	133,319	133,319	934,050	821,964

Notes: This table corresponds to the results provided in table 3. TH refers to “tax havens.” 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.

FIGURE AF3 – Distribution of compensations



Notes: This figure depicts the distribution of executives' compensations, expressed in thousands current US dollars. See section 5 for more details.

TABLE AT6 – Executive pay and multinational experience

Dependent variable	$\ln(\text{compensation}_{e,i,t})$
<i>FDI experience</i> _{e,i,t}	0.374 ^a (0.071)
<i>age</i> _{e,t}	-0.007 (0.007)
<i>firm experience</i> _{e,i,t}	0.014 ^c (0.007)
<i>CEO</i> _{e,i,t}	0.405 ^a (0.016)
<i>CFO</i> _{e,i,t}	0.226 ^a (0.019)
Executive FEs	Yes
Firm-year FEs	Yes
R ²	0.912
No. of obs.	54,542

Notes: This table evaluates the effect of multinational experience on executive pay. The results correspond to equation (6). 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 5 for more details.

Online Appendix

Executive mobility through the lens of the medias and official documents

In table 2 panel C2, I investigate what triggers executive mobility using official documents, press releases, newswires, and newspapers (e.g., SEC and FBI reports, firms' websites, Wall Street Journal, New York Times, Business Wire, PR Newswire). To fully understand the causes, the task is done manually on a sample of 165 randomly drawn executives (i.e., 5 percent of the pool of executives). A particular attention is paid to five particular scenarios: deaths, abrupt resignations, retirements, sudden layoffs, and resignations and lay offs preceded by legal investigations.

The key assumption for identification in table 2 panel C2 is that changes in $TREAT_{i,c,t}$ are exogenous under such circumstances. The change in the stock of experienced executives between year $t - 1$ and t in firm i is assumed 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 abruptly resigns in year $t - 1$ or t . 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. Should this type of information be unavailable, the resignation is treated as abrupt if it is effective three months before its announcement. Sometimes, what could be accordingly defined as a sudden resignation is actually expected and initiated by firms. This is notably the case when firms perceive the financial performance as unsatisfactory. That explains why I deviate from this standard definition in some cases, in light of the information at hand. The same logic applies to sudden/early layoffs when executives are ousted a few months after their appointment. If there is no relevant information as to why executive e leaves the current firm, I adopt a conservative approach and code the movement as endogenous. To illustrate how it is done in practice, I report below some examples.

Example 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, August 13, 1999)

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

Example 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.

Example 3 “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. [...] 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.

Example 4 “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.

Example 5 “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.

Example 6 “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.

Example 7 “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.

Importantly, 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:

- “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)
- “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)