Who cares about conformity? How cultural tightness in target and source locations affects firms' tendency to mimic each other's foreign investment location choices

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We examine the role of cultural tightness of source and target locations in affecting MNEs imitative behavior by analyzing location decisions for manufacturing investments in the U.S. by multinational firms at a fine-grained regional level (Metropolitan Statistical Areas), 2003-2012. We find that the likelihood that an MNE imitate the location strategies of other MNEs is positively affected by the level of cultural tightness in both the target and in the source location.

1. Introduction

Foreign direct investment (FDI) is regarded as an important driver of economic growth as it fosters the accumulation of capital and enables the incorporation of new inputs and knowledge for recipient countries. In view of these benefits, countries compete between each other to attract higher shares of FDI. Given the importance of FDI for the economy, several authors have devoted their attention to the understanding of the location determinants of FDI with the aim to provide useful insights for policy makers.

While agglomeration theory has been the dominant theory to explain the spatial clustering of firms, other studies within the institutional theory domain have suggested that spatial clustering may actually occur because firms' mimic the investment location choices of other firms considered to be relevant (Belderbos et al,, 2011), so-called peers. According to institutional theory (Meyer and Rowan, 1977; DiMaggio and Powell, 1983), organizational behavior is driven by other organizations and wider social forces such as cultural rules and beliefs. Unlike conventional economic theory which focuses on economic rationales to explain firms choices, institutional theory suggests that firms choose organizational practices and structures as a reaction to conformity pressures arising from the firm's institutional environment, which can comprise interest groups, regulatory structures, public opinion, but also other firms (Kostova and Zaheer, 1999; Oliver, 1991). On the latter, the empirical evidence has shown that due to the uncertainty surrounding every strategic decision, firms tend to combine the information they have at their disposal with the information they obtain from other firms in order to arrive to a decision (Gimeno et al., 2005). However, as the information obtained from the behavior of other firms is always uncertain, firms rely on the information provided by firms belonging to a specific reference group in order to gain legitimacy (Meyer and Scott, 1983).

One group of firms that has proved to affect the strategic decisions of a focal firm is the one constituted by firms based in the same country (Dana et al., 2008; Rangan and Sengul, 2009; Tan and Meyer, 2011). Indeed, firms that shares the same broad interorganizational environment are more likely to have social contacts between each other which in turn eases the transmission of relevant information and thus reducing focal firm's uncertainty over important strategic decisions (Gaur and Makino, 2007).

Firms have also been found to imitate firms operating in the same industry (Martin et al., 1998; Guillen, 2002). For example, Henisz and Delios (2001) found that the decision of where to locate a plant abroad is not only affected by the location decisions previously made by firms from the same home country, but also from the location decisions made by firms operating in the same industry. Indeed, the imitation of firms belonging to the same industry provides a strong legitimation effect

(DiMaggio and Powell, 1983) as it facilitates the transfer of information on new opportunities for investment and growth (Haunschilda and Beckman, 1998).

One issue that characterizes these institutional theory-based studies of corporate internationalization is that they assume that the pressure to conform to other firms' behavior is the same, thus disregarding variation in the cultural environment in which the firm operates. However, empirical evidence seems to contradict this assumption. For example, Gelfand et al. (2006, 2011) uncovered substantial heterogeneity in the degree to which different countries accept deviant behavior, i.e. what they label 'cultural tightness-looseness'. This notion is based on two main components: The strength of social norms, reflecting how clear and pervasive norms are within societies, and the strength of sanctioning, referring to the level of tolerance for deviations from norms within societies. What Gelfand et al. (2011) show is that some countries are tight as they have strong social norms and deviant behavior is not highly tolerated, whereas others are loose as social norms are weaker with high deviations and tolerance among individuals.

Within international business research, the notion of cultural tightness has not received much attention, which is rather surprising given that the pressure to conform has been found to have an important impact on firms' internationalization decisions. For example, Yiu and Makino (2002), showed that when firms have to choose the mode of entering a foreign market, they tend to conform to the regulative settings of the host-country environment, the normative pressures imposed by local people, and the cognitive mindsets as defined by peers and firms' own previous entry choices. By conforming to the host country's regulative, normative and cognitive setting, firms can acquire legitimacy, which has been proved to be a fundamental condition for the success of firm's operations in a foreign country. As stated by Suchman (1995), "legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions". The importance of legitimacy for firms foreign operations has been shown for example by Chan and Makino (2007): under a strong pressure to conform to the host country, firms are likely to take a lower ownership stake in exchange for external legitimacy.

This paper contributes to the existing literature by specifically examining whether the tendency of firms to imitate foreign location choices made by other relevant firms is affected by the cultural tightness-looseness of internationalizing firms' home and target locations.

2. Hypothesis development

The decision to geographically diversify a firm's operations entails a great amount of uncertainty (Henisz and Delios, 2001). For example, firms need to decide how to organize transactions in the new market in order to maximize chances of success (Martin et al. 1998). Previous research has shown that firms may respond to this uncertainty by choosing to remove transactions from the market and establish wholly owned subsidiaries (Williamson, 1996). Even when firms decide to do so, there may still be high uncertainty about investment conditions in the host country (Henisz and Delios, 2001). Firms may thus combine the information at their disposal with information obtained from other firms in order to decide the best location for the subsidiaries (Gimeno et al., 2005). However, as shown by previous research on the topic, firms are selective in whom they will follow (Haunschild and Miner, 1997). In particular, firms will tend to imitate firms that are similar to them, so-called peers, as they may believe that these peers possessed superior information on target locations and may interpret their location choices as a signal of a location's attractiveness. This may lead them to make the same choice. In line with previous research on the topic, we hypothesize:

Hypothesis 1: The higher the number of investments that a firm's peers made in a foreign location, the higher the chance that the firm will invest in that location

One of the key foci of institutional theory is a firm's legitimacy, broadly defined as the degree to which a firm is socially accepted by its environment (Deephouse, 1996; Dowling and Pfeffer, 1975; Oliver, 1991). Legitimacy is conferred upon a firm by non-market actors, notably the public (consisting of both individual consumers and advocacy groups) and the government (consisting of both individual officials and government agencies) (Deephouse, 1996; Oliver, 1991). If these actors generally perceive or assume a firm's behavior to be desirable, proper, or appropriate, they will consider the firm legitimate and reward it with various types of passive or active support (Suchman, 1995). For instance, advocacy groups will leave it alone, potential customers will be willing to buy its products and endorse them, and government agencies will prolong its permits (Suchman, 1995). Legitimacy is therefore crucial to a firm's financial performance and, hence, to its survival (Dowling and Pfeffer, 1975; Heugens and Lander, 2009). Moreover, it has also been argued that, by conforming to the rules and norms prevailing in their environment, firms can gain or retain legitimacy and thus increase their chances of survival (Child and Tsai, 2005; Deephouse and Carter, 2005; DiMaggio and Powell,1983). However, as shown by Gelfand et al. (2006, 2011), the pressure to conform is not the same across locations. Instead, substantial heterogeneity has been proved to exist in the degree to which different countries accept deviant behavior, i.e. cultural tightness. We therefore hypothesize:

Hypothesis 2a: The higher the cultural tightness in a foreign location, the stronger the positive relationship between the number of investments that a firm's peers made in that location and the chance that the firm will invest there.

Besides the cultural tightness in the target location of a foreign investment, the cultural tightness in the home location of a foreign investor will also likely affect an investor's tendency to mimic the FDI location choices of its peers. We therefore hypothesize:

Hypothesis 2b: The higher the cultural tightness in a firm's home location, the stronger the positive relationship between the number of investments that a firm's peers made in a foreign location and the chance that the firm will invest there.

Because firms from culturally tight locations generally face higher domestic conformity pressures, they usually will be more accustomed to adhering to conformity pressures. As suggested by the attention-based view (Bouquet at al., 2009; Hendriks et al., 2018), they will generally pay more attention to such pressures and thus be more likely to notice them when expanding into foreign locations. The degree to which target-location cultural tightness strengthens foreign investors' tendency to mimic their peers' FDI location choices will therefore likely be stronger among foreign investors from culturally tight home countries. In other words:

Hypothesis 3: Cultural tightness in a firm's home location amplifies the strengthening effect of the cultural tightness in a foreign location on the positive relationship between the number of investments that a firm's peers made in that location and the chance that the firm will invest there.

3. Methodology

We test these hypotheses by examining foreign investors' location decisions for greenfield investments in the U.S.. The choice of U.S. as target country is motivated by the fact that previous research has identified high variation in cultural tightness within the U.S. (Harrington and Gelfand, 2014). This country thus provides a good setting for the purpose of the project. As the target geographic unit of analysis, we will use U.S. Metropolitan Statistical Areas (MSAs), which are defined by the U.S. Office of Management and Budget (OMB) for statistical purposes as core urban areas with at least 50,000 inhabitants and a central county plus adjacent counties that have a high degree of economic integration with the central county, as measured through worker commuting ties. Adjacent counties are included in an MSA if at least 25 percent of employed residents in the central county commute to work in these counties. The largest city in each MSA is designated a "principal city." Additional cities qualify if specified requirements are met concerning population size and employment. The reason why we opt for this geographical unit of analysis relies on the great

availability of data collected at this level by several federal government agencies (Nussle, 2008). After each decennial census realized by the Census Bureau, the OMB revises the list of current MSAs in order to reflect changes in the demographic composition of such areas. Given that investments contained in the database were performed between 2003 and 2012, we opted for the list of MSAs released by the OMB following the 2000 decennial census and released in 2003.

3.1 Data

Data on FDI have been collected from the *fDi Markets* database. This database is considered to be the most comprehensive database on cross-border greenfield investments and covers investments made by MNEs operating in all industries and countries. It is based on more than 8000 news sources and the proprietary sources of the Financial Times Ltd and has recorded more than 120,000 worldwide cross-border greenfield investments as of 2003. The database has been increasingly used by scholars (e.g. Bhalla et al. 2008; Castellani et al., 2013; Castellani and Pieri, 2013; Crescenzi et al., 2014; D'Agostino et al., 2013) and its accuracy and validity have been confirmed independently by different researchers (e.g. Castellani and Pieri, 2013; Crescenzi et al., 2014). The database provides detailed information on the investment such as the source and destination country, region and city as well as the industry tagged to the investment. With respect to these industries, the database classifies each investment into 260 industries. The classifications provided by the *fDi Markets* is aligned with the North American Industry Classification System (NAICS).

From the *fDi Markets* database, we identified all manufacturing investments (according to the industry tagged to the investment) made by foreign firms in the U.S. from 2003 until 2012. Out of the 5182 manufacturing investments, 2277 have been automatically matched to an MSA, given the information provided by the fDi Markets (State, city, county), through the crosswalk county-to-MSA table (NBER, 2000). The remaining 2905 have been manually allocated. Out of these, 579 cannot be matched at any regional level as no data on the city or administrative region was recorded in the fDi Markets database. Given that the only geographical information for these investments is the state where the investments are located, they have to be dropped from the dataset as it is not possible to allocate them to an MSA. In addition, 5 of the 2905 investments among those investments that have been manually allocated cannot be assigned to an MSA because the city is wrong (e.g. Washington reported as both being the destination city and destination State) or the investment is located in extraterritorial areas (e.g. U.S. Virgin Islands). The total number of investments successfully allocated to a U.S. county is then 4598. Out of these 4598 investments, 689 are located in counties that are not part of any Metropolitan Statistical Areas which makes the total number of investments allocated to an MSA equal to 3909. The geographical covering of investments by MSAs is then 85.02%.

Since several variables have been constructed with U.S. data on employment collected by the Bureau of Economic Analysis at the industry level (NAICS), we additionally examine the value chain activity of each investment as reported by the fDI markets database to make sure that these activities are among the ones listed in the description provided by the Bureau of Labor Statistics accompanying each NAICS industry. Given that we analyze location decision for manufacturing investments, we first exclude all investments whose value chain activity is not manufacturing. Then, we add those investments whose value chain activity is not manufacturing but is still among the activities listed by the NAICS industry description. To provide an example, for those investments in the Furniture and Related Products manufacturing (NAICS 337), besides investments whose value chain activity reported is manufacturing, we additionally include 2 investments whose value chain activity is Design, Development & Testing as "Design and fashion trends play an important part in the production of furniture. The integrated design of the article for both esthetic and functional qualities is also a major part of the process of manufacturing furniture". A detailed description of which investments have been added is reported in the appendix. Our final sample consists of 1711 investments.

With respect to the different manufacturing sectors represented in our sample, we can see from Table 1 that most of the investments were made in the Transportation Equipment (26.88%), Chemical (12.97%), Plastics and Rubber Products (12.62%), Machinery (10.99%) and Food (5.32%) sectors. From Table 2 instead, we can see that most of the investments have been made by firms headquartered in Germany (20.22%), Japan (18.00%), the UK (8.07%), Canada (7.60%), and France (7.01%).

3.1 Variables

3.2.1 Dependent variable

The dependent variable is a binary variable taking value 1 if the MNE choose MSA region l for the location of its manufacturing investment and 0 otherwise. Out of 354 MSAs, 261 have received an investment between 2003 and 2012. Figure 1 shows a map of U.S. MSAs with the corresponding distribution of the share of manufacturing investments included in our sample.

3.2.2 Number of MSA-level investments by peers

We measure the number of investments in an MSA made by a firm's peers by counting those investments in the MSA that were made by firms from the same home country as the focal firm over the previous five years. This choice has been made for two reasons. First, previous literature has showed that firms tend to mimic the location choices of firms from the same country (Dana et al., 2008; Rangan and Sengul, 2009; Tan and Meyer, 2011), resulting in 'co-ethnic communities' in foreign locations (Stallkamp et al., 2018). The second reason is that a positive effect of a count of

prior investments may also be driven in part by the strength of agglomeration economies in the location, even if one separately controls for such economies. It is therefore important to choose a count whose positive effect on the probability of investing in the same location is most likely to reflect mimicry. That count is a home-country-based count that covers firms from all industries, since a positive effect of that count is unlikely to be driven by agglomeration economies. We limit our measure to investments made over the previous five years because firms have been found to primarily mimic the recent behavior of other firms (Belderbos et al., 2011; Sampson, 2005).

3.2.3 Cultural tightness

We measure the cultural tightness in the U.S. target location of an investment and the home location of the foreign investor by the composite index developed by Gelfand and colleagues (Gelfand et. all, 2006, 2011; Harrington and Gelfand, 2014). For the US, Harrington and Gelfand (2014) select nine items considered to be relevant and central expressions of the tightness construct. Four items reflect the strength of punishment: the legality of school corporal punishment, the percentage of students hit in schools, the rate of executions from 1976 to 2011, and the severity of marijuana laws. Two items reflect permissiveness: the ratio of dry to total counties per state and the legality of same-sex civil unions. Higher scores for these items reflect higher cultural looseness. These two items were then reversed so that higher scores were indicative of greater tightness. Two items reflect the presence of institutions that reinforce moral order and constrain behavior: the rate of religiosity and the percentage of individuals with no religious affiliation. Finally, the last item reflects the degree to which there is high international diversity: the percentage of population that is foreign. Most of these items have been collected by Harrington and Gelfand (2014) for the year 2006 only. Given that for many items, data are available also for other years, we re-calculate the index for all the years for which we have investments in our sample (2003-2012). We did this for all the items except for the rate of religiosity and the percentage of individuals with no religious affiliation. Indeed, for both items, Harrington and Gelfand (2014) relied on two surveys made in 2008 and 2004 respectively (Gallup, 2009; Gallup, 2000–2004). Unfortunately, alternative data sources to calculate the two items for the full timeframe (2003-2012) were not available. As shown in Table 3 and Table 4., all index items are moderately correlated and are internally consistent ($\alpha = 0.83$). The Kaiser–Meyer– Olkin measure of sampling adequacy is equal to 0.76, exceeding the recommended value of 0.6 (Kaiser, 1970; 1974) and the Bartlett's test of sphericity is statistically significant, $\chi 2(36) = 1812.05$, indicating that the data are suitable for factor analysis (Bartlett, 1954). Following Harrington and Gelfand (2014), we also use parallel analysis to determine the number of factors to retain. Results indicate that a single factor solution is optimal. As shown in Table 5, all items loaded highly on this single factor, accounting for

41.08% of the sample variance. Correlation between items, the level of internal consistency, the Kaiser–Meyer– Olkin measure of sampling adequacy and the Bartlett's test of sphericity that we calculate are very similar to what have been found by Harrington and Gelfand (2014). At the same time, the parallel analysis used by Harrington and Gelfand (2014) also indicate that a single factor solution is optimal, with all items loading highly on the single factor, accounting for 46.45% of the sample variance.

In order to assess the level of cultural tightness of the home locations of the investments contained in our sample, we instead relied on the work of Gelfand et al. (2011). Indeed, the reconstruction of the index as in Harrington and Gelfand (2014) for all the investments' home locations was not feasible given the lack of data across all these countries. Indeed, Gelfand et al. (2011) calculate the level of cultural tightness across countries through surveys. In particular, they interviewed 6823 individuals from a wide range of occupations and construct a cultural tightness for 33 countries. Given that the number of countries for which a cultural tightness score is limited, we lose 361 investments from 19 countries for which the index is not available.

3.2.4 Control variables

Firms may not only undertake FDI in the same location as other firms because they have a tendency to mimic their peers. It is therefore important to control for other reasons why firms may invest in the same MSA as others. Perhaps the main other reason is the existence of agglomeration economies, defined as positive externalities stemming from the geographic concentration of industrial activity (Alcacer and Chung, 2014). In order to account for their magnitude, we use Glaeser and Kerr's (2009) agglomeration framework and include five variables: *Level of industry agglomeration in MSA, Industry potential for labor-related agglomeration benefits in MSA, Industry potential for supplier-related agglomeration benefits in MSA, Industry potential for customer-related agglomeration benefits in MSA, Industry potential for knowledge-related agglomeration benefits in MSA*. An extensive description of the Glaeser and Kerr's framework and of the variables is provided in the appendix.

Besides controlling for the role played by agglomeration economies, we also control for several other factors that have been found to influence FDI location choice. Previous literature has consistently found that location decisions of MNEs are highly responsive to the sophistication of local markets (Head and Mayer, 2004). We therefore control for an *MSA's level of economic development* by entering its GDP per capita in the year of the focal investment as reported by the Bureau of Economic Analysis. Another factor that has been found to attract FDI is the presence of urbanization economies (Monseny et al., 2014). To control for the presence of urbanization economies, we include the variable

c (linear and squared), retrieving data from the U.S. Census Bureau (Scaled by 10.000 for ease of interpretation). Previous research has emphasized the role that human capital plays in attracting FDI (Alcacer and Chung, 2002; Crescenzi et al., 2014). We thus include the variable *MSA's human capital* which is calculated as the share of the MSA population with third level education. Data have been collected from the American Community Survey which is administered by the U.S. Census Bureau.

One major determinant that has been found to discourage foreign investments are labor costs (Bartik, 1985; Coughlin at al., 1991). We include the variable *MSA's labor costs* calculated as a weighted average of wage costs by occupations at the industry level for each MSA, with weights given by the occupation needs of each industry. Data on wage costs by occupation have been drawn from the Bureau of Labor Statistics. We also control for the *MSA's geographic distance from investor's HQ,* as a larger distance increases informational uncertainty and coordination costs (Ghemawat, 2001). Coordinates on host and source locations have been collected from GeoNames. We also control for co-location effects (Alcacer and Delgado, 2016; Defever, 2012), namely the propensity of MNEs to locate close to already established subsidiaries. Specifically, we construct the variable *Investor's experience with MSA* as a dummy variable taking value 1 if the MSA already hosts a subsidiary of the focal foreign investor, and zero otherwise. In order to construct this variable, we used subsidiary data from the ORBIS database and greenfield investment data from the fDi Market database.

Finally, we control for variation in unobserved characteristics across states that may affect the location decisions of MNEs by including state fixed effects.

3.3 Method

To model the location choice process, where each firm chooses one MSA among the set of 354 MSAs, we employ a conditional logit model. Within the spatial location literature (Alcacer and Chung, 2007 and 2014, Belderbos et al., 2011; Head et al. 1995), this is a widely used model to analyze location choices (Mc Fadden, 1974). The model starts with a random utility maximization (RUM) setting to examine the choice an individual, in this framework the multinational $n: 1, \ldots . N$, makes among a choice set of alternatives, in this framework the MSA $l: 1, \ldots . L$ for the setup of an investment at time t. The multinational firm n is assumed to consider all the alternatives in the choice set and then choose the one with the highest expected utility $U_{nl,t}$ as a function of observable attributes $V_{nl,t-1}$ and unobservable factors ε_{nl}. The expected utility can then be expressed by the function:

$$U_{nl,t} = \beta V_{nl,t-1} + \varepsilon_{nl} \quad (1)$$

Where $V_{nl,t-1}$ is the vector of MSA-specific characteristics that can vary across industries and firms and ε_{nl} is the MSA-specific random disturbance term.

If the errors terms are independently and identically distributed with type 1 extreme-value distribution, the probability that a multinational firm n prefers a MSA l over all the other alternatives to locate its FDI investment can be then calculated by the following formula:

$$P_{nl,t} = \frac{exp(\beta V_{nl,t-1})}{\sum_{l=1}^{L} exp\,(\beta V_{nl,t-1})} \qquad (2)$$

To mitigate multicollinearity concerns, all non-dichotomous independent variables were demeaned.

4. Results

Table 6 reports the pairwise correlations between all variables. For each model we also calculate the variance inflator factor. The highest value is 8.48 which is below the threshold of 10 and thus indicates that multicollinearity should not be a concern (Hair et al., 1995).

Table 7 reports the results of the conditional logit models that we ran to test our hypotheses. Model 1 only contains the control variables, including target-location cultural tightness. It shows that all the control variables have the expected sign although the variable *MSA's labor costs* is not significant. While an insignificant coefficient for this variable may appear surprising, previous literature has also found no effect of labor costs in discouraging foreign investments (Ondrich and Wasylenko, 1993; Guimaraes et al., 2000).

Coefficients for *MSA's level of economic development* and *Investor's experience with MSA* are positive and significant as expected. The positive and significant coefficient of *MSA's population density* and the negative and significant coefficient of *MSA's population density squared* suggest that MNEs are attracted by those MSAs with a high population density up to a certain point after which congestion effects may render MSAs less attractive. The variable *MSA's human capital* is positive and significant, suggesting that MNEs value the quality of human capital when deciding where to locate their investments. Similarly, the presence of previous affiliates and the possibility to benefit from agglomeration economies positively attract investing firms as shown by the positive coefficients *Investor's experience with MSA, Level of industry agglomeration in MSA, Industry potential for labor-related agglomeration benefits in MSA, Industry potential for supplier-related agglomeration benefits in MSA,* and *Industry potential for knowledge-related agglomeration benefits in MSA.* On

the other hand, the distance of the location of the investment from its source negatively affect the location of manufacturing investments as shown by the negative coefficient of *Geographic Distance*. The *State-level cultural tightness* variable is positive and significant which suggests that MNEs prefer to invest in MSAs located in culturally tight states.

Model 2 tests hypothesis 1, which predicted that the higher the number of investments that a firm's peers made in a foreign location, the higher the chance that the firm will invest in that location. This hypothesis is supported as the regression coefficient of the *Number of prior investments in MSA by firms from same home country* is significantly positive in Model 2. The table also shows that by including the variable *Number of prior investments in MSA by firms from same home country*, there is an increase in the explanatory power of the model as highlighted by the likelihood ratio test. This is also confirmed by the increase in the value of the pseudo R^2 from 0.6141 of model 1 to 0.6448 of Model 2.

Model 3 tests hypothesis 2a, which stated that the higher the cultural tightness in a foreign location, the stronger the positive relationship between the number of investments that a firm's peers made in that location and the chance that the firm will invest there. This hypothesis is supported as the regression coefficients of the variables *State-level cultural tightness*, *Number of prior investments in MSA by firms from same home country* and their interaction are positive and significant. The table also shows that by including the interaction term, there is an increase in the explanatory power of the model as highlighted by the Likelihood ratio test. This is also confirmed by the increase in the value of the pseudo R^2 from 0.6448 of Model 2 to 0.6456 of Model 3.

Model 4 and Model 6 test hypothesis 2b, which stated that the higher the cultural tightness in a firm's home location, the stronger the positive relationship between the number of investments that a firm's peers made in a foreign location and the chance that the firm will invest there. This hypothesis is supported as the regression coefficients of the variable *Number of prior investments in MSA by firms from same home country* is higher in magnitude in Model 4.

Finally, Model 5 and Model 7 tests hypothesis 3, which stated that cultural tightness in a firm's home location amplifies the strengthening effect of the cultural tightness in a foreign location on the positive relationship between the number of investments that a firm's peers made in that location and the chance that the firm will invest there. The hypothesis is supported as the regression coefficient of the interaction between the variable *State-level cultural tightness* and the variable *Number of prior investments in MSA by firms from same home country* is positive and significant in Model 5 while in Model 7 the interaction is positive but not significant. This is also confirmed by the increase in the explanatory power from Model 4 to Model 5 as highlighted by the likelihood ratio test.

5. *Supplementary analyses*

Since foreign investors may not only mimic the FDI location choices of firms from their home country but also those from the same industry (Martin et al., 1998; Guillen, 2002), we performed two additional analyses. First, we constructed the variable *Number of prior investments in MSA by firms from same industry (3 digits)* which is measured by counting the number of previous investments classified in the same (broad) NAICS 3 digits industry as the focal investment. In our sample, we can distinguish among 18 different industries at the 3 digits level. Table 8 displays the regression results we obtained when we used this industry-based count of prior investments by peers in an MSA rather than our original home-country-based count.

In Table 8, we then report the results of the conditional logit models including the variable *Number of prior investments in MSA by firms from same industry (3 digits)* instead of the variable *Number of prior investments in MSA by firms from same home country*. Model 9 shows that the variable *Number of prior investments in MSA by firms from same industry (3 digits)* is positive and significant. This suggests that the presence of previous foreign investments in the same broadly defined industry of the focal investment in a host location, increases the likelihood that the focal investment will be made in that location which provides support for hypothesis 1. Instead, Model 10 shows that the interaction between the *State-level cultural tightness* variable and the variable *Number of prior investments in MSA by firms from same industry (3 digits)*, is positive but not significant. This suggests that the level of cultural tightness of a host location does not affect the positive relationship between the number of investments made in that location by firms in a certain broadly defined industry and the likelihood that the focal firm in the same broadly defined industry will invest there which does not provide support for hypothesis 2a. Turning the attention to the split sample analysis, we can then see that the variable *Number of prior investments in MSA by firms from same industry (3 digits),* is higher in magnitude in Model 10 as compared to Model 12. This result instead provides support for hypothesis 2b. Moreover, the interaction between the variable *State-level cultural tightness* and the variable *Number of prior investments in MSA by firms from same industry (3 digits)* is positive and significant only in Model 11 while is positive but not significant in Model 13. This result thus provides support for hypothesis 3.

Second, we constructed the variable *Number of prior investments in MSA by firms from same industry (4 digits)* which is measured by counting the number of previous investments classified in the same (narrow) NAICS 4 digits industry as the focal investment. In our sample, we can distinguish among 69 different industries at the 4 digits level. Table 9 displays the regression results we obtained when

we used a more narrowly defined industry count variable. Results provide support for all the hypotheses.

6. *Conclusion*

Our findings suggest when firms decide where to locate their subsidiaries abroad, cultural tightness affects the tendency of these firms to imitate the location choice made by peers. In particular, we show that, controlling for traditional locational drivers, firms tend to imitate the location decisions of other firms from the same country (Dana et al., 2008; Rangan and Sengul, 2009; Tan and Meyer, 2011), but this tendency is affected by level of cultural tightness of both target and source location.

More specifically, we show that when firms decide to invest in culturally tighter locations, the tendency to imitate other firms from the same country is stronger. At the same time, we also show that also when firms are based in culturally tighter locations, the tendency to imitate other firms from the same country is stronger. Finally, when we consider the level of cultural tightness of both target and source location, we find that the imitative behavior is further strengthened.

Our results underline the importance of acknowledging the heterogeneity that characterizes the degree to which countries accept deviant behavior when investigating the location decision for FDI made by MNEs. Indeed, previous studies dealing with the location of FDI have underlined that MNEs do not simply select the location for their investments according to pure economic rationale but also imitate the decisions of other firms due to isomorphic pressures (Kostova and Zaheer, 1999; Oliver, 1991). However, these studies have all assumed that the pressure to conform to other firms' behavior is the same in all locations and thus for all firms, thereby disregarding variation in conformity pressures stemming from the cultural environment that a firm enters or originates from. Moreover, our results suggest that conformity pressures and thus mimetic behavior are not always as strong as institutional theorists have claimed it to be. In particular, we show that in culturally loose target and home locations, conformity pressures do not really affect firms strategic decisions.

Despite these contributions and implications, our study has several limitations that could serve as a foundation for future research. First, while by relying on the work of Harrington and Gelfand (2014) we are able to precisely measure the degree of cultural tightness for the target locations of FDI across time, for source locations the measure has no time dimensions. Moreover, we acknowledge that we do not consider the variation in the level of cultural tightness that may exist in firms' home countries. In future work, we aim to construct an index similar to the one in Harrington and Gelfand (2014) in order to more precisely assess the role played by the heterogeneity in cultural tightness across time and source locations of FDI.

Second, we acknowledge that our analysis is restricted to greenfield manufacturing investments into the US. Although this relatively narrow setting has the advantage of improving comparability among locations, it does raise the question of whether our results are generalizable to other entry modes, industries, and host countries. Future studies could shed light on this issue.

Third, in this study, we solely focus on home-country and (secondarily) on industry-based imitation. However, it has been shown that firms can also imitate the actions of large firms over small firms (Gilbert and Lieberman, 1987), similar over dissimilar firms (Scott, 1992), or high status over low status (Rao et al., 2001). Future research could therefore replicate our analysis for such other forms of imitation.

Fourth, our count variables record investments made by peers only over the previous five years. While we decided to do so because firms have been found to primarily mimic the recent behavior of peers (Belderbos et al., 2011; Sampson, 2005), firms may also mimic FDI location decisions made by peers before than five years. Unfortunately, due to the limited number of years for which we have data on FDI location decisions, we are unable to use different time windows.

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8. Figures, Tables and Outputs

Figure 1. Distribution of manufacturing investments (share) across MSAs (2003-2012)

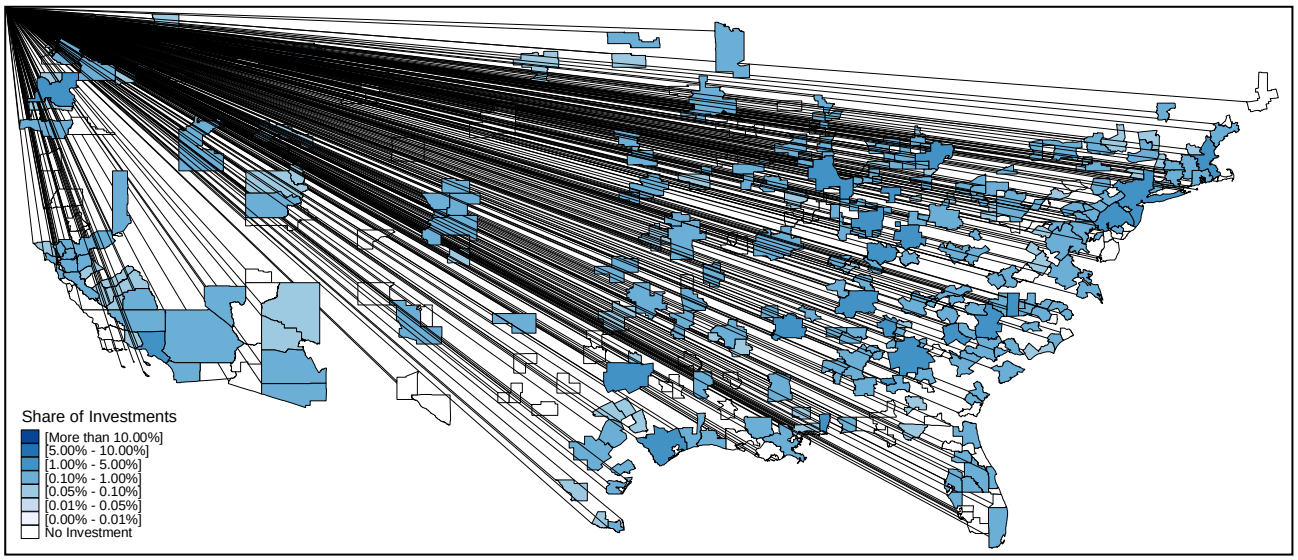

Table 1. Distribution of cross-border manufacturing investments across industries

Sector (NAICS 3 Digits)	Frequency	Percentage
Transportation Equipment	460	26.88%
Chemicals	222	12.97%
Plastics and Rubber Products	216	12.62%
Machinery	188	10.99%
Food	91	5.32%
Electrical Equipment, Appliances, and Components	83	4.85%
Primary Metals	82	4.79%
Fabricated Metal Products	75	4.38%
Miscellaneous Products	65	3.80%
Computer and Electronic Products	59	3.45%
Nonmetallic Mineral Products	50	2.92%
Paper	28	1.64%
Beverage and Tobacco Products	21	1.23%
Petroleum and Coal Products	21	1.23%
Textile Products	17	0.99%
Wood Products	13	0.76%
Furniture and Related Products	12	0.70%
Printing Products	8	0.47%

Table 2. Distribution of cross-border manufacturing investments by source country

Source Country	Frequency	Percentage
Germany	346	20.22%
Japan	308	18.00%
UK	138	8.07%
Canada	130	7.60%
France	120	7.01%
Switzerland	72	4.21%
South Korea	70	4.09%
Italy	61	3.57%
Netherlands	56	3.27%
Sweden	37	2.16%
Australia	35	2.05%
Denmark	35	2.05%
Spain	32	1.87%
Finland	28	1.64%
Belgium	24	1.40%
China	23	1.34%
Austria	22	1.29%
India	21	1.23%
Mexico	20	1.17%
Brazil	18	1.05%
Israel	17	0.99%
Norway	13	0.76%
Ireland	12	0.70%
Taiwan	11	0.64%
Luxembourg	10	0.58%
Hong Kong	7	0.41%
Russia	6	0.35%
New Zealand	5	0.29%
South Africa	5	0.29%
Greece	4	0.23%
Portugal	4	0.23%
Malaysia	3	0.18%
Saudi Arabia	3	0.18%
Thailand	3	0.18%
Chile	2	0.12%
Colombia	2	0.12%
Venezuela	2	0.12%
Argentina	1	0.06%
Bermuda	1	0.06%
Cayman Islands	1	0.06%
Lebanon	1	0.06%
Monaco	1	0.06%
Turkey	1	0.06%

Table 3. Correlation between state-level cultural tightness index items

Items	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Legality of corporal punishment in schools (1)								
Percentage of students hit/punished in schools (2)	0.48***							
Rate of executions (3)	0.39***	0.32***						
Severity of punishment for marijuana law violations (4)	0.38***	0.34***	0.47***					
Legality of same sex civil unions (reversed) (5)	0.35***	0.18***	0.23***	0.31***				
Ratio of dry to total counties (6)	0.41***	0.67***	0.08	0.12*	0.15**			
State religiosity (7)	0.62***	0.60***	0.43***	0.54***	0.51***	0.43***		
Percentage of individuals with no religious affiliation (reversed) (8)	0.24***	0.39***	0.27***	0.51***	0.35***	0.25***	0.69***	
Percentage of population that is foreign (reversed) (9)	0.25***	0.26***	0.07	0.21***	0.35***	0.22***	0.34***	0.30***

Table 4. Reliability statistics for cultural tightness index items

Items	Corrected Item-Total Correlations	Alpha if Item Deleted
Legality of corporal punishment in schools (1)	0.70	0.80
Percentage of students hit/punished in schools (2)	0.72	0.80
Rate of executions (3)	0.55	0.83
Severity of punishment for marijuana law violations (4)	0.66	0.81
Legality of same sex civil unions (reversed) (5)	0.59	0.82
Ratio of dry to total counties (6)	0.56	0.82
State religiosity (7)	0.88	0.78
Percentage of individuals with no religious affiliation (reversed) (8)	0.68	0.81
Percentage of population that is foreign (reversed) (9)	0.51	0.83

Table 5. Factor loadings for state-level cultural tightness

Items	Factor Loading
Legality of corporal punishment in schools (1)	0.69
Percentage of students hit/punished in schools (2)	0.73
Rate of executions (3)	0.54
Severity of punishment for marijuana law violations (4)	0.69
Legality of same sex civil unions (reversed) (5)	0.59
Ratio of dry to total counties (6)	0.55
State religiosity (7)	0.89
Percentage of individuals with no religious affiliation (reversed) (8)	0.69
Percentage of population that is foreign (reversed) (9)	0.48

Table 6. Pairwise correlations between all variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Dependent variable (1)															
Level of industry agglomeration in MSA (2)	0,060														
Industry potential for labor-related agglomeration benefits in MSA (3)	0,017	0,143													
Industry potential for supplier-related agglomeration benefits in MSA (4)	0,004	-0,010	0,001												
Industry potential for customer-related agglomeration benefits in MSA (5)	0,004	-0,030	-0,010	0,055											
Industry potential for knowledge-related agglomeration benefits in MSA (6)	0,006	0,045	0,091	0,010	-0,030										
MSA's level of economic development (7)	0,029	0,233	0,003	-0,000	0,003	-0,040									
MSA's population density (8)	0,027	0,330	0,004	0,020	0,001	-0,030	0,368								
MSA's population density squared (9)	0,002	0,020	-0,010	0,003	-0,000	-0,011	0,146	0,700							
MSA's human capital (10)	0,017	0,122	-0,020	-0,040	-0,010	-0,072	0,525	0,269	0,103						
MSA's labor costs (11)	0,022	0,248	-0,010	-0,070	-0,040	-0,041	0,550	0,435	0,198	0,486					
MSA's geographic distance from investor's HQ (12)	-0,000	-0,000	-0,020	0,006	0,007	-0,012	-0,024	0,002	0,012	-0,042	-0,014				
Investor's experience with MSA (13)	0,135	0,119	0,015	0,004	-0,010	0,005	0,052	0,065	0,021	0,030	0,067	0,006			
State-level cultural tightness (14)	0,014	-0,070	0,035	0,083	0,026	0,021	-0,103	-0,18	-0,09	-0,181	-0,440	0,025	0,003		
Number of prior investments in MSA by firms from same home country (15)	0,151	0,180	0,013	0,013	0,003	0,004	0,084	0,076	0,001	0,042	0,096	0,009	0,130	0,041	
*Number of prior investments in MSA by firms from same home country * State-level cultural tightness (16)*	0,065	-0,020	0,003	0,000	0,003	-0,010	0,012	-0,03	-0,01	0,012	0,031	0,019	0,033	0,433	-0,010

Correlations greater than |0.001| are significant at $p<0.05$ (two tailed)

Table 7. Conditional Logit Estimates of the Determinants of Foreign Investors' Choice of MSA within the US[1]

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Level of industry agglomeration in MSA	0.0833***	0.0602***	0.0603***	0.0519***	0.0527***	0.0797***	0.0796***
	(0.0130)	(0.0131)	(0.0130)	(0.0196)	(0.0195)	(0.0202)	(0.0201)
Industry potential for labor-related agglomeration benefits in MSA	0.432***	0.478***	0.475***	0.379**	0.367**	0.615***	0.613***
	(0.102)	(0.101)	(0.101)	(0.173)	(0.174)	(0.140)	(0.141)
Industry potential for supplier-related agglomeration benefits in MSA	0.410**	0.373**	0.368**	0.244	0.235	0.261	0.257
	(0.178)	(0.177)	(0.178)	(0.289)	(0.291)	(0.271)	(0.272)
Industry potential for customer-related agglomeration benefits in MSA	0.322*	0.293	0.296	0.541**	0.542**	0.467*	0.470*
	(0.191)	(0.189)	(0.188)	(0.275)	(0.275)	(0.280)	(0.278)
Industry potential for knowledge-related agglomeration benefits in MSA	0.168***	0.117**	0.125**	0.0439	0.0611	0.170**	0.173**
	(0.0497)	(0.0515)	(0.0507)	(0.0849)	(0.0826)	(0.0788)	(0.0787)
MSA's level of economic development	1.105***	1.074***	1.030***	1.291***	1.200***	1.105***	1.081***
	(0.183)	(0.187)	(0.186)	(0.267)	(0.267)	(0.336)	(0.338)
MSA's population density	1.349***	1.318***	1.302***	1.037**	1.014**	2.137***	2.106***
	(0.346)	(0.339)	(0.336)	(0.467)	(0.456)	(0.675)	(0.674)
MSA's population density squared	-0.0729***	-0.0772***	-0.0751***	-0.0568	-0.0532	-0.138***	-0.135**
	(0.0272)	(0.0270)	(0.0268)	(0.0375)	(0.0365)	(0.0531)	(0.0532)
MSA's human capital	2.014***	1.540***	1.578***	1.171	1.259*	1.510*	1.512*
	(0.464)	(0.482)	(0.482)	(0.728)	(0.729)	(0.811)	(0.810)
MSA's labor costs	-0.0786	0.0285	0.0179	0.0774	0.0365	0.174	0.180
	(0.151)	(0.147)	(0.147)	(0.219)	(0.219)	(0.261)	(0.260)
MSA's geographic distance from investor's HQ	-0.504***	-0.513***	-0.577***	-1.503***	-1.835***	-0.779	-0.963**
	(0.156)	(0.169)	(0.162)	(0.572)	(0.487)	(0.476)	(0.414)
Investor's experience with MSA	3.331***	2.979***	2.988***	3.270***	3.285***	2.534***	2.541***
	(0.181)	(0.201)	(0.200)	(0.349)	(0.347)	(0.268)	(0.264)
State-level cultural tightness		0.0163***	0.0126***	0.0203***	0.0121*	0.0213***	0.0187***
		(0.00419)	(0.00387)	(0.00640)	(0.00661)	(0.00715)	(0.00634)
Number of prior investments in MSA by firms from same home country		0.174***	0.170***	0.165***	0.159***	0.155***	0.151***
		(0.0171)	(0.0167)	(0.0156)	(0.0150)	(0.0303)	(0.0286)
*Number of prior investments in MSA by firms from same home country * State-level cultural tightness*			0.00139*		0.00227***		0.00132
			(0.000756)		(0.000830)		(0.00170)
State fixed effects	YES	YES	YES	YES	YES	YES	YES
N° Manufacturing Investments	1711	1711	1711	809	809	541	541
N° Alternative choices	354	354	354	354	354	354	354
Wald Chi2	4442.90***	3563.13***	3679.95***	1150.99***	1261.83***	1607.39***	1665.42***
Likelihood ratio test		623.35(1)***	8.07(2)***		11.46(4)***		2.04(6)

[1] When skewed, we log transformed the variables.

Table 8. Conditional Logit Estimates of the Determinants of Foreign Investors' Choice of MSA within the US[2]

	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14
Level of industry agglomeration in MSA	0.0833***	0.0651***	0.0647***	0.0643***	0.0639***	0.0739***	0.0736***
	(0.0130)	(0.0132)	(0.0131)	(0.0198)	(0.0196)	(0.0208)	(0.0206)
Industry potential for labor-related agglomeration benefits in MSA	0.432***	0.350***	0.347***	0.216	0.206	0.519***	0.517***
	(0.102)	(0.105)	(0.107)	(0.176)	(0.178)	(0.143)	(0.147)
Industry potential for supplier-related agglomeration benefits in MSA	0.410**	0.502***	0.493***	0.317	0.294	0.480*	0.506*
	(0.178)	(0.188)	(0.187)	(0.309)	(0.304)	(0.268)	(0.273)
Industry potential for customer-related agglomeration benefits in MSA	0.322*	0.224	0.231	0.622**	0.642**	0.221	0.220
	(0.191)	(0.179)	(0.179)	(0.275)	(0.275)	(0.269)	(0.266)
Industry potential for knowledge-related agglomeration benefits in MSA	0.168***	0.0589	0.0715	0.0152	0.0523	0.0700	0.0691
	(0.0497)	(0.0564)	(0.0558)	(0.0924)	(0.0908)	(0.0882)	(0.0875)
MSA's level of economic development	1.105***	1.052***	1.040***	1.248***	1.243***	1.144***	1.097***
	(0.183)	(0.194)	(0.192)	(0.271)	(0.272)	(0.363)	(0.363)
MSA's population density	1.349***	1.335***	1.335***	1.092**	1.100**	2.270***	2.252***
	(0.346)	(0.337)	(0.335)	(0.468)	(0.461)	(0.690)	(0.700)
MSA's population density squared	-0.0729***	-0.0786***	-0.0776***	-0.0603	-0.0591	-0.146***	-0.143***
	(0.0272)	(0.0268)	(0.0266)	(0.0372)	(0.0365)	(0.0543)	(0.0547)
MSA's human capital	2.014***	1.639***	1.718***	1.660**	1.826***	1.016	1.031
	(0.464)	(0.511)	(0.498)	(0.678)	(0.688)	(0.850)	(0.839)
MSA's labor costs	-0.0786	-0.0167	-0.0621	-0.0269	-0.134	0.176	0.160
	(0.151)	(0.145)	(0.152)	(0.211)	(0.215)	(0.259)	(0.254)
MSA's geographic distance from investor's HQ	-0.504***	-0.424**	-0.467***	-1.080	-1.188*	-0.908*	-1.159***
	(0.156)	(0.180)	(0.174)	(0.732)	(0.700)	(0.463)	(0.341)
Investor's experience with MSA	3.331***	2.855***	2.837***	3.201***	3.216***	2.170***	2.018***
	(0.181)	(0.227)	(0.232)	(0.376)	(0.378)	(0.291)	(0.383)
State-level cultural tightness	0.0247***	0.0212***	0.0164***	0.0247***	0.0155**	0.0235***	0.0170**
	(0.00316)	(0.00489)	(0.00442)	(0.00630)	(0.00709)	(0.00909)	(0.00841)
Number of prior investments in MSA by firms from same industry (3 digits)		0.320***	0.309***	0.340**	0.348***	0.276***	0.257***
		(0.0331)	(0.0326)	(0.147)	(0.133)	(0.0215)	(0.0225)
*Number of prior investments in MSA by firms from same industry (3 digits) * State-level cultural tightness*			0.00419		0.00505**		0.00883
			(0.00404)		(0.00233)		(0.0104)
State fixed effects	YES	YES	YES	YES	YES	YES	YES
N° Manufacturing Investments	1711	1711	1711	809	809	541	541
N° Alternative choices	354	354	354	354	354	354	354
Wald Chi2	4442.90***	3051.41***	3121.27***	1055.39***	1163.58***	1563.95***	1648.25***

[2] When skewed, we log transformed the variables.

Table 9. Conditional Logit Estimates of the Determinants of Foreign Investors' Choice of MSA within the US[3]

	Model 15	Model 16	Model 17	Model 18	Model 19	Model 20	Model 21
Level of industry agglomeration in MSA	0.0833***	0.0638***	0.0625***	0.0593***	0.0619***	0.0799***	0.0802***
	(0.0130)	(0.0133)	(0.0135)	(0.0204)	(0.0207)	(0.0203)	(0.0203)
Industry potential for labor-related agglomeration benefits in MSA	0.432***	0.295***	0.273**	0.159	0.0769	0.445***	0.456***
	(0.102)	(0.106)	(0.113)	(0.177)	(0.189)	(0.145)	(0.154)
Industry potential for supplier-related agglomeration benefits in MSA	0.410**	0.459***	0.442**	0.338	0.355	0.394	0.327
	(0.178)	(0.169)	(0.178)	(0.271)	(0.280)	(0.278)	(0.298)
Industry potential for customer-related agglomeration benefits in MSA	0.322*	0.222	0.216	0.521**	0.502*	0.248	0.262
	(0.191)	(0.168)	(0.177)	(0.249)	(0.268)	(0.274)	(0.291)
Industry potential for knowledge-related agglomeration benefits in MSA	0.168***	-0.104*	-0.0589	-0.118	-0.0545	-0.138	-0.104
	(0.0497)	(0.0568)	(0.0558)	(0.0931)	(0.0913)	(0.0947)	(0.0934)
MSA's level of economic development	1.105***	1.305***	1.217***	1.568***	1.556***	1.141***	1.008***
	(0.183)	(0.192)	(0.196)	(0.272)	(0.271)	(0.374)	(0.358)
MSA's population density	1.349***	1.464***	1.309***	1.217**	1.140**	2.122***	1.883***
	(0.346)	(0.350)	(0.335)	(0.484)	(0.463)	(0.707)	(0.672)
MSA's population density squared	-0.0729***	-0.0952***	-0.0794***	-0.0760*	-0.0671*	-0.144**	-0.122**
	(0.0272)	(0.0282)	(0.0270)	(0.0393)	(0.0375)	(0.0564)	(0.0533)
MSA's human capital	2.014***	1.178**	1.288***	0.913	1.178	0.935	0.914
	(0.464)	(0.487)	(0.492)	(0.731)	(0.726)	(0.885)	(0.845)
MSA's labor costs	-0.0786	0.0616	-0.0620	0.101	-0.137	0.282	0.290
	(0.151)	(0.139)	(0.141)	(0.203)	(0.203)	(0.249)	(0.248)
MSA's geographic distance from investor's HQ	-0.504***	-0.393**	-0.598***	-0.974	-1.493**	-0.336	-0.853
	(0.156)	(0.199)	(0.177)	(0.780)	(0.596)	(0.625)	(0.523)
Investor's experience with MSA	3.331***	2.616***	2.537***	2.930***	2.892***	1.923***	1.881***
	(0.181)	(0.232)	(0.236)	(0.337)	(0.357)	(0.369)	(0.382)
State-level cultural tightness	0.0247***	0.0333***	0.00783*	0.0392***	0.0122*	0.0224	0.00372
	(0.00316)	(0.00496)	(0.00445)	(0.00796)	(0.00700)	(0.0150)	(0.00829)
Number of prior investments in MSA by firms from same industry (4 digits)		0.402***	0.419***	0.530***	0.513***	0.359***	0.365***
		(0.0249)	(0.0252)	(0.126)	(0.0955)	(0.0251)	(0.0255)
*Number of prior investments in MSA by firms from same industry (4 digits) * State-level cultural tightness*			0.0167***		0.0165***		0.0132**
			(0.00194)		(0.00211)		(0.00570)
State fixed effects	YES	YES	YES	YES	YES	YES	YES
N° Manufacturing Investments	1711	1711	1711	1711	809	809	541
N° Alternative choices	354	354	354	354	354	354	354
Wald Chi2	4442.90***	3086.25***	3009.31***	1183.52***	1181.07***	1296.93***	1281.59***

[3] When skewed, we log transformed the variables.

9. *Appendix*

9.1 Agglomeration framework

Agglomeration economies can be defined as the benefits arising when firms are located near one another forming industry clusters. Co-located firms have advantages over isolated ones as they have greater access to specialized suppliers, greater access to specialized labor, knowledge spillovers and finally access to greater specialized demand. Previous literature has empirically assessed the presence of agglomeration economies either by calculating the geographic concentration of industrial activity or by counting the number of previous firms' entries in a certain location. However, both approaches do that allow the identification of the actual benefits associated with agglomeration economies (Alcacer and Chung, 2014; Glaeser and Kerr, 2009). In the paper, we thus employ an agglomeration framework due to Glaeser and Kerr (2009) which distinguishes between agglomeration levels and agglomeration benefits and proposes the use of separate variables for these two agglomeration aspects. The reason is that the geographic concentration of economic activity within an industry (i.e., agglomeration) does not necessarily generate positive externalities (i.e., agglomeration economies) for firms from that industry entering the location, as there may already be many firms competing for the same factors. We control for the *Level of industry agglomeration in MSA* by entering the total number of employees in the industry within the MSA in a given year. MSA's industry employment will also capture the MSA's economic size. To control for the agglomeration benefits that a firm from a given industry may be able to achieve in a given MSA, we include four variables measuring the potential for positive externalities within a given industry-MSA combination in terms of the availability of specialized labor, the availability of specialized suppliers, the availability of specialized demand and the potential for knowledge spillovers. We proxy for the benefits associated with the presence of specialized labor for an MNE operating in industry i and investing in MSA l with the variable *Industry potential for labor-related agglomeration benefits in MSA* as follows:

$$Industry\ potential\ for\ labor-related\ agglomeration\ benefits\ in\ MSA_{ilt} = \left[\sum_{O=1,\dots O} L_{iO} * \frac{EO_{olt}}{EO_{lt}}\right] * \left[\frac{EO_{ot}}{EO_{t}}\right]^{-1}$$

Where L_{iO} is the percentage of industry i employment in occupation o, EO_{olt} is the employment in occupation o in MSA l at time t, EO_{lt} is the employment for all occupations in MSA l at time t, EO_{ot} is the employment in occupation o for all MSAs and finally EO_t is the employment for all occupations and all MSAs. As we did for the previous variables, we gathered data on employment from the County Business Patterns database. Data on occupational requirements instead have been

collected from the National Employment Matrix as released by the Bureau of Labor Statistics. The table reports for each industry the share of employees required in each distinct occupation.

We proxy for the benefits associated with the presence of specialized suppliers for an MNE operating in industry i and investing in MSA l with the variable *Industry potential for supplier-related agglomeration benefits in MSA*:

$$Industry\ potential\ for\ supplier-related\ agglomeration\ benefits\ in\ MSA_{ilt} = \left[\sum_{k=1,\dots I} input_{\ i\leftarrow k} * \frac{E_{klt}}{E_{kt}}\right] * \left[\frac{E_{lt}}{E_t}\right]^{-1}$$

Where $input_{i\leftarrow k}$ are the shares of inputs produced by all other industries and necessary to industry i as provided by the industry-by-industry total requirements table , E_{klt} is the employment of industry k in MSA l at time t, E_{kt} is the employment of industry k in all MSAs, E_{lt} is the employment in MSA l for all industries and E_t is the overall employment for all industries and all MSAs.

To proxy for the benefits associated with the presence of specialized demand for an MNE investing in the focal MSA l and operating in industry i, we construct the variable *Industry potential for customer-related agglomeration benefits in MSA.* Again using the industry-by-industry total requirements table, we calculate the sum of the shares of industry i output ($output_{i\rightarrow k}$) that go to all other industries serving as an input for these industries and weight these shares by the ratio between the share of employees working for industries that are buyers of the outputs of the investing firm in year t and MSA l ($\frac{E_{klt}}{E_{kt}}$) and the share of all employees in MSA l at year t ($\frac{E_{lt}}{E_t}$). In formula:

$$Industry\ potential\ for\ customer-related\ agglomeration\ benefits\ in\ MSA_{ilt} = \left[\sum_{k=1,\dots I} output_{i\rightarrow k} * \frac{E_{klt}}{E_{kt}}\right] * \left[\frac{E_{lt}}{E_t}\right]^{-1}$$

Where E_{klt} is the employment of industry k in MSA l at time t, E_{kt} is total employment for industry k across MSAs, E_{lt} is total employment in MSA l at time t , and E_t is total employment across MSAs and industries at time t.

We proxy for the presence of potential knowledge spillovers for an MNE operating in industry i and investing in MSA l, with the variable *Industry potential for knowledge-related agglomeration benefits in MSA*:

$$Industry\ potential\ for\ knowledge-related\ agglomeration\ benefits\ in\ MSA_{ilt} = \left[\sum_{x=1\dots X} w_{i,x} * \frac{P_{xlt}}{P_{lt}}\right] * \left[\frac{P_{xt}}{P_t}\right]^{-1}$$

Where $w_{i,x}$ is the weight indicating how a patent class x is relevant for industry i, P_{xrt} is the fractional count of patents in patent class x in MSA l at time t, P_{lt} is the fractional count of patents in all patent classes in MSA l at time t, P_{xt} is the fractional count of patents in all patent classes in MSA l at time

t, P_t is the fractional count of patents in all patent classes and in all MSAs at time t. We retrieved patent data from the OECD Regpat database linked to the Worldwide Statistical Patent Database (PATSTAT, October 2012).

9.2 Cleaning of investments

Within the **Computer and Electronic Products** industry (**NAICS 334**), We additionally include 6 investments whose value chain activity is ICT & Internet Infrastructure given that the activities reported by the North American Industrial Classification System (NAICS) for firms active in this industry are "manufacturing computers, computer peripherals, communications equipment, and similar electronic products, and manufacturing components for such products. The design and use of integrated circuits and the application of highly specialized miniaturization technologies are common elements in the production technologies of the computer and electronic subsector".

Within the **Electrical Equipment, Appliance, and Components** industry (**NAICS 335**), We additionally include 1 investment whose value chain activity is Electricity given that the activities reported by the North American Industrial Classification System (NAICS) for firms active in this industry are "manufacturing products that generate, distribute and use electrical power. Electric Lighting Equipment Manufacturing establishments produce electric lamp bulbs, lighting fixtures, and parts. Household Appliance Manufacturing establishments make both small and major electrical appliances and parts. Electrical Equipment Manufacturing establishments make goods, such as electric motors, generators, transformers, and switchgear apparatus".

Within the **Food** industry (**NAICS 311**), We additionally include 5 investments whose value chain activity is Retail given that the activities reported by the North American Industrial Classification System (NAICS) for firms active in this industry are "transforming livestock and agricultural products into products for intermediate or final consumption. The industry groups are distinguished by the raw materials (generally of animal or vegetable origin) processed into food products. The food products manufactured in these establishments are typically sold to wholesalers or retailers for distribution to consumers, but establishments primarily engaged in retailing bakery and candy products made on the premises not for immediate consumption are included".

Within the **Furniture and Related Products** industry (**NAICS 337**), We additionally include 2 investments whose value chain activity is Design, Development & Testing given that the activities reported by the North American Classification System (NAICS) for firm active in this industry are "making furniture and related articles, such as mattresses, window blinds, cabinets, and fixtures. The processes used in the manufacture of furniture include the cutting, bending, molding, laminating, and assembly of such materials as wood, metal, glass, plastics, and rattan. However, the production

process for furniture is not solely bending metal, cutting and shaping wood, or extruding and molding plastics. Design and fashion trends play an important part in the production of furniture. The integrated design of the article for both esthetic and functional qualities is also a major part of the process of manufacturing furniture. Design services may be performed by the furniture establishment's work force or may be purchased from industrial designers".

Within the **Machinery** industry (**NAICS 333**), We additionally include 24 investments whose value chain activity reported is Logistics, Distribution & Transportation given that the activities reported by the North American Classification System (NAICS) for firm active in this industry are "creating end products that apply mechanical force, for example, the application of gears and levers, to perform work. Some important processes for the manufacture of machinery are forging, stamping, bending, forming, and machining that are used to shape individual pieces of metal. Processes, such as welding and assembling are used to join separate parts together. Although these processes are similar to those used in metal fabricating establishments, machinery manufacturing is different because it typically employs multiple metal forming processes in manufacturing the various parts of the machine. Moreover, complex assembly operations are an inherent part of the production process."

Within the **Paper** industry (**NAICS 322**), We additionally include 3 investments whose value chain activity reported is Recycling given that the activities reported by the North American Classification System (NAICS) for firm active in this industry are "making pulp, paper, or converted paper products. The manufacturing of these products is grouped together because they constitute a series of vertically connected processes. More than one is often carried out in a single establishment. There are essentially three activities. The manufacturing of pulp involves separating the cellulose fibers from other impurities in wood or used paper. The manufacturing of paper involves matting these fibers into a sheet. Converted paper products are made from paper and other materials by various cutting and shaping techniques and includes coating and laminating activities".

Within the **Primary Metal** industry (**NAICS 331**), We additionally include 2 investments whose value chain activity reported is Recycling given that the activities reported by the North American Classification System (NAICS) for firm active in this industry are "smelting and/or refining ferrous and nonferrous metals from ore, pig or scrap, using electrometallurgical and other process metallurgical techniques. Establishments in this subsector also manufacture metal alloys and superalloys by introducing other chemical elements to pure metals. The output of smelting and refining, usually in ingot form, is used in rolling, drawing, and extruding operations to make sheet, strip, bar, rod, or wire, and in molten form to make castings and other basic metal products. "