Direct Flights and Cross-border Mergers & Acquisitions*

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July 2021

Abstract

Prior evidence indicates that proximity increases investments resulting in stronger economic growth. The introduction of a non-stop direct flight between two locations in different countries allows for faster travel and a lower cost of acquiring information, potentially facilitating acquisitions abroad. We examine this channel by considering cross-border mergers and acquisitions (M&A) activity between China and the U.S. Our results suggest that direct flights matter most in target selection. Direct flights are more important for M&A activity where information asymmetry is greater and for first time acquirers in the market. We demonstrate that endogeneity is unlikely to drive the results.

JEL classification: F15, F21, F23, G11, G34

Keywords: Direct Flights, Cross-border M&A, Capital Flows

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We would like to thank Douglas Cumming (the editor), two anonymous referees, Jesse Ellis, Jared Smith, participants in workshops at North Carolina State University, South China University of Technology, Jinan University and Guangdong University of Foreign Studies for their helpful comments.

1. Introduction

A growing literature has provided consistent evidence that investors prefer more proximate investments where distance is viewed in the context of travel time. Examples include portfolio investments (Da et al., 2021; Ellis et al., 2020), venture capital (Bernstein et al., 2016), and internal capital market budgeting (Giroud, 2013). The implication of this evidence suggests that human interaction matters, and electronic connections are not a perfect substitute for in person meetings when making capital allocation decisions. The advantage of face-to-face interactions could come from better ex ante information acquisition as well as ex post monitoring. Prior studies provide evidence for a causal link between improved travel access, such as improved flight connections and better rail access, and economic growth.[1]

We extend these lines of inquiry by investigating another economically important channel where improved connections can plausibly have a positive and economically meaningful effect. We examine non-stop direct flight introductions and their effect on cross-border M&As. A non-stop direct flight not only decreases travel time between two markets, but it also reduces travel uncertainty associated with a connecting flight. Adding more flights to an itinerary increases the likelihood of delays, cancellations, and lost luggage. Therefore, the decline in time spent in transit for a traveler is just one of the savings generated by the introduction of a direct flight. Cross-border M&As have characteristics where decreased travel times could have large economic effects. Prior work has found that flight introductions are important in security selection for portfolio managers (Ellis et al., 2020) and for capital allocations within internal capital markets (Giroud, 2013).

[1] Most notably, Campante and Yanagizawa-Drott (2018) show that increased air connections are related to satellite-measured night-lights. Brueckner (2003) and Green (2007) provide evidence on the connection between airports and local economic growth. This literature also includes papers that show increased rail connections dating to the 19th century were associated with increased asset prices and economic growth such as in Donaldson and Hornbeck (2016) and Donaldson (2018).

The selection of any one stock in a well-diversified portfolio will only have a modest impact on the overall risk-return characteristics of that portfolio. Yet, Ellis et al. (2020) find that flight introductions affect stock selections suggesting that the relative cost of information acquisition matters. Likewise, Giroud (2013) finds that budget allocations in internal capital markets are also influenced by flight introductions, presumably through lowered cost of acquiring information. M&A is less likely to be a part of a well-diversified portfolio for the acquirer, at least from the point of view of the firm, increasing downside risks associated with making a bad investment. Further, a target firm has much greater information asymmetry as compared to a division that is already part of the enterprise. Greater proximity that results in shorter travel time lowers transaction costs associated with both the acquisition of information as well as ex post monitoring. As such, we predict that flight introductions will be particularly important for cross-border M&A given that these prior studies have found economically important effects in settings that either have less downside risk or have less information asymmetry.

Our setting is M&A activity between China and the U.S. using flight introductions as our treatment for proximity. China and the U.S. provide us with an interesting laboratory for this study due to several favorable characteristics. First, in the last twenty years, China and the U.S. have experienced greatly increased cross-border economic activity. Second, newly opened Arctic routes better connected the eastern and central U.S. with China.[2] Finally, China has built up enormous foreign reserves due to their twin surpluses (from 2001 to 2014) in the current and capital accounts. These reserves have provided a war chest for outbound investment.

We use data on cross-border M&A, both for Chinese and U.S. targets and sources,

[2] The first U.S. to Asia flight over the Arctic Ocean was from New York (JFK) to Hong Kong (Chep Lap Kok) in 1998.

between 2003 and 2016. In our main empirical specification, we use the introduction of direct flights as the treatment variable to investigate its effects on cross-border M&A activity between pairs of Chinese and U.S. cities. We evaluate the impact of direct flights on the number and the total volume of cross-border M&A transactions. We find that the introduction of a direct flight between cities in China and the U.S. significantly increases the probability of cross-border M&A activity between the pair of cities connected by the flight. Further, the introduction of a direct flight raises the number of cross-border M&A deals between the pair of cities by about 0.75 transactions annually, and it increases the total volume of M&A transactions by about $50 million annually. While there were only 5 cross-border M&A transactions between China and the U.S. in 2003 at the start of our sample period (see Figure 1), there were 55 M&A deals completed in 2016, the last year in the sample. Given our estimate of an additional cross-border transaction between a pair of cities for every new non-stop direct flight introduced, the 30 new direct flights introduced between 2003 and 2016 (see Table 1), can account for 60 percent (or 30 transactions) of the actual increase of 50 transactions in that time period.

We further examine this finding to investigate the direction of causality. It is possible that anticipated increase in economic activity between two locations is an impetus for adding a direct flight. Thus, the observed increase in M&A activity may not be the result of the flight introduction, rather the causality runs in the other direction. We utilize an identification strategy previously used by Giroud (2013) in the context of domestic U.S. manufacturing, plant-level investment to determine the direction of causality. Specifically, we estimate the effect of a direct flight on cross-border M&A activity between U.S. and Chinese cities that are not directly connected by it but experience a decline in travel time associated with the flight introduction. For example, Phoenix and Wuhan do not have a direct flight connecting them. However, a direct flight between San Francisco and Wuhan, which began service in 2015, improved travel between the two cities through an improved connection. The introduction of the flight between San Francisco and Wuhan is unlikely to be related to increased economic ties between Phoenix and Wuhan. Thus, these indirect improvements in travel allow us to more confidently identify the causal impact in our empirical setting given that our econometric strategy also includes city pair and city by year fixed effects.

Our results using this identification strategy indicate that the decline in flight time brings about a greater likelihood of cross-border M&A activity and a larger number of deals. The impact of reduced travel time on cross-border M&A due to indirect flight introductions are economically and statistically significant, but as expected, the impact is smaller in magnitude compared to the effects on cities that are directly connected. The evidence suggests that greater proximity and lower transaction costs have a positive, causal impact on cross-border M&A activity between China and the U.S.

We include two additional robustness tests to further justify a causal interpretation of our results. First, we estimate no lead effects to support reverse causality. Second, we conduct a placebo test by randomly assigning flights to different cities but preserving the overall flight distribution between China and the U.S. and the timing of flight introductions. We find no effect of the randomly assigned flights, suggesting that the placebo test fails to provide any evidence of endogeneity that could be driven by omitted variables.

We continue our analysis by investigating the firm level economic impacts of the deals in order to provide evidence on the mechanism. Hard information such as the firm's financial data can be readily reviewed from a distance. Soft information, which can include a better understanding of firm capabilities, prospects, risks, and so forth, is likely better acquired on location and is potentially more valuable than hard information (Liberti and Petersen, 2019). If a reduction in the costs of information acquisition associated with a direct flight is economically meaningful, then we expect that for targets which are generally more opaque, such as smaller or private companies, or for targets that are less familiar to the acquirer, such as targets in diversifying deals, a direct flight will matter more. We do find consistent evidence that the type of target matters. We show that direct flights have a significant positive effect on the number and aggregate value of the deals for private targets. On the other hand, the impact is considerably smaller and never statistically significant for public targets. Further, we divide the sample into two groups of deals – large deals, which are in the top quartile of deal size distribution, and the rest, non-large deals. We find that the effect of the introduction of a direct flight for non-large deals is positive, economically large, and statistically significant, while the impact on large deals is much smaller and not statistically significant.

We also conduct additional cross-sectional tests, where we divide our sample into separate groups of horizontal deals (same 4-digit SIC), vertical deals (same 2-digit SIC, but different 4-digit SIC), and unrelated (diversifying) deals. These tests provide the same intuition. While all the coefficients on the direct flight indicator in our econometric models are positive and significant in all 3 sub-samples, the pattern of the relative magnitudes is clear. The impact of direct flights is smaller for deals where the acquirer is more familiar with the target's industry. We find that deals where the target and acquirer are in the same industry (horizontal deals) experience the smallest impact from a direct flight; deals in different but related industries (vertical deals) experience a greater impact, and those in unrelated industries (diversifying deals) experience the greatest impact. These results are consistent with the intuition that direct flights have the largest effects for deals where information acquisition is relatively more important and where information acquisition costs are relatively higher.

The evidence indicates that the relative costs of information acquisition matter. We continue our analysis to better discern whether the information acquisition matters more in ex ante target selection or more so in ex post monitoring. Our conjecture is that if information acquisition costs in target selection are relatively more important for a cross-border deal, then the first acquisition in a particular foreign country involves a steep learning curve. This should be more important in our setting where the cultural, language, legal, and other differences are significant. As such, we expect that the importance of a direct flight will matter more for the first deal and less so afterwards. If, ex post monitoring is relatively more important, we expect that the significance of direct flights will persist from the first deal an American firm (Chinese firm) does in China (in the U.S.) to later deals. The evidence we uncover suggests that there is a decline in importance for direct flights following the first deal for a given firm. Hence, information acquisition for ex ante target selection is likely more important than ex post monitoring in this setting.

Our final tests examine the valuation impact of these deals. We estimate that for publicly traded firms, acquisitions following direct flight introductions experience abnormal announcement returns that are an economically important 2.0 to 3.4 percent greater (depending on the window examined) relative to those of acquirers that buy targets in cities without a direct flight. The evidence suggest that the market reacts favorably to the selected target and the characteristics of the deal. Longer term effects are more ambiguous. We find some weak evidence that acquirers that engage in diversifying deals (targets in unrelated industries) or in deals with private targets have higher Tobin's Q (Q) in the year following the transaction. However, the effect is undetectable by the second year following the transaction. Our work is related to Kang and Kim (2008) and Uysal et al. (2008), who use U.S. domestic deals, as well as Eckbo and Thorbun (2000), who examine domestic and cross-border deals in Canada. These studies provide evidence that more proximate deals are more valuable for bidders. In contrast, Kenglebach (2010) finds evidence of a negative neighbor country effect. The findings presented here on the market's favorable reception of these direct flight deals relative to non-direct flight deals suggest that there is a distance penalty that can be mitigated by access to more efficient transportation.

Cross-border M&A is an important way for foreign direct investment (FDI), and FDI can be an important channel for economic growth. M&A allows for investment in a new market in a less risky manner compared to green field investment. Our conjecture is that lower cost of acquiring information due to reduction in travel time facilitates new investment, particularly so for markets where travel is time consuming. Our evidence suggests M&A is a channel for economic growth associated with improved air links as shown by Campante and Yanagizawa-Drott (2018).

Our findings are related to the literature on transportation infrastructure and trade costs. Cai, Tian, and Xia (2016) provide evidence that urban targets are more attractive than rural targets using a sample on U.S domestic deals possibly due to access to better transportation. Soderlund (2019) investigates the impact of the opening of Soviet airspace allowing direct Europe to Asia flights. His evidence indicates that these flights were associated with economically large increases in trade. Donaldson (2018) finds that transportation infrastructure projects, such as railroad expansions, decrease trade costs and inter-regional price gaps, while they increase inter-regional trade, international trade, and real income. Charnoz, Lelarge, and Trevien (2018) show how employment and output were affected by increased high speed rail links in France. Similarly, U.S. county agricultural land values increased substantially as the railroad network expanded (Donaldson et al., 2016). Direct flights can decrease trade costs (Cristea, 2011; Yilmazkuday and Yilmazkuday, 2017). As transportation infrastructure improvements decrease the cost of trade, the size distribution of firms, income, and the patterns of consumption and trade also change (Antras et al., 2006; Pascali, 2017). Our finding that improved flight connections enhances business investment via acquisitions is consistent with this literature.

While there is a large amount of research focusing on the effects of direct flights on economic growth and other outcomes, our paper is closest in spirit to Giroud (2013) and Bernstein et al. (2016). Giroud (2013) uses firm-level analysis to evaluate the effect of domestic, direct flights on firm investment in the U.S. He finds that new airline routes that reduce travel time between company headquarters and production facilities lead to an increase in plant-level investment of about 8% and an increase in plants' total factor productivity of about 1.3%. Bernstein et al. (2016) show that venture capitalists have more successful investments when a new direct flight connects their location with one of their funded firms. Our paper finds that increased likelihood and amount of investments associated with direct flights are also evident in a setting with more information asymmetry. Our setting reaches beyond the internal workings of one firm. We observe investments that connect two countries with different languages, legal systems, and cultures. In our empirical work, we employ deal-level analysis to evaluate the impact of new direct flights between two regions, connecting locales in China and the U.S., on the likelihood, the number, and the volume of cross-border M&As. We find that direct flights have a greater effect on deals with more information asymmetry. Not surprisingly, the initial foray into a foreign market appears to be the most affected by direct flights.

Our work is also related to the broader literature on cross-border M&A flows. Recent work by Liang et al. (2020) shows that shareholders react negatively to cross-border deal announcements when the acquirer has more generous employment policies. Schweizer et al. (2019) find that political connections of top managers increase the likelihood of a cross-border deal completion for publicly listed, privately owned Chinese enterprises. Lim et al. (2016) demonstrate that the relationship between cultural distance and cross-border M&A premiums is not symmetric, but rather differs by acquirer origin. For example, they document a negative correlation between cultural distance and premiums when U.S. investors acquire foreign targets, but they do not find such negative correlation when foreign investors acquire U.S. targets. Alimov and Officer (2017) provide evidence that stronger property rights protection is associated with greater inbound cross-border M&A activity in intellectual capital intensive industries. Kandilov and Leblebicioglu (2020), on the other hand, demonstrate that improving trade secrets protection across U.S. states leads to a decline in the number of inbound M&A deals and overall deal volume. Huang et al. (2016) show that foreign investors are more likely to use stock as the method of payment for targets located in countries where relative governance risk is greater. Finally, Xu (2017) shows that cross-border M&A activity is clustered by industry and time, and deals within these cross-border M&A waves are associated with better outcomes (e.g., post-merger operating performance) than are deals outside of the waves.

The rest of the paper is organized as follows. In the next section, we discuss our conceptual framework and describe the data that we use. The third section details our identification strategy, presents the empirical results and the robustness tests that we perform. We offer some concluding thoughts in the last section.

2. Conceptual Framework and Data

Previous work has shown that information asymmetries are a consequence of geographic distance (Portes and Rey, 2005; Buckley et al., 2007). Further, cultural differences (Stahl and Voigt, 2008; Bauer and Matzler, 2014; Ahern et al., 2015) can create another barrier to the success of cross-border M&As. Lower travel costs in terms of time, money, and reduced uncertainty due to fewer flight connections, are likely to result in more face-to-face interactions with a target firm abroad, i.e. lower information acquisition costs. This cost reduction should both increase the optimal level of monitoring and advice, and coordination from top management in the home country, which may lead to better performance. Hence, the introduction of a direct flight between two regions in different countries increases the probability of cross-border M&As activity between them. We expect CEOs and directors to favor potential acquisition targets, all else the same, that can be reached by a direct flight, or at least, locations that require shorter flight time. This could imply greater number of cross-border deals and greater dollar volume of cross-border transactions.

Further, the greater the face-to-face interaction with a potential subsidiary abroad when there exists a direct flight, the lower the cost of acquiring information, which may lead to the selection of targets with better prospects. In addition, the management team can monitor the acquired assets more efficiently subsequent to the deal. Both channels -- better target selection and better monitoring -- suggest that the direct flight could lead to better announcement returns for the acquirer.

Our sample period runs from 2003 to 2016. We begin in 2003 following a new air service agreement between the Chinese government and the U.S. government allowing for increased access to each other's markets, rather than the previous agreement that included only limited number of cities. Prior to 2003, the number of cross-border M&A deals between China and the U.S. was negligible. The period that we examine follows China's accession to the World Trade Organization (WTO) in 2001. Further, arctic routes over Russia were already opened to U.S.-China flights originating from central and eastern U.S. cities.

The data on direct flights between the two countries comes from the International Civil Aviation Organization (ICAO). The Traffic by Flight Stage (TFS) data set contains information on airports and cities served, as well as dates for route introductions. Table 1 provides information on all direct flights between China and the U.S. just prior to the beginning of our sample in 2003 and afterwards along with the population of the city/MSA as of 2010. There were only 6 direct flights prior to 2003. From 2004 to 2016 there were 30 new direct flights introduced between the two countries.

Our unit of observation is a pair of locations, one in China and the other one in the U.S. Our baseline results define location pairs as Chinese cities and U.S. MSAs (Metropolitan Statistical Areas as defined by the U.S. Census Bureau). We utilize different definitions for airport location as robustness checks. To construct our location-pairs, we need an identifiable, tractable set of locations in China and in the U.S. For the U.S., we choose the 40 largest MSAs as these metropolitan areas all have airports with multiple international flights. Similarly, for China, we select the 15 largest cities, all of which have major airports that serve international locations. The cities in China include Beijing, Shanghai, Guangzhou, Shenzhen, Tianjin, Changsha, Chengdu, Chongqing, Fuzhou, Hangzhou, Jinan, Nanjing, Qingdao, Wuhan and Xiamen.[3] The majority of these cities have at least one direct flight with the U.S. by the end of the sample period.

The variable of interest in our multivariate models is Direct Flight, which is an indicator

[3] We do not consider flights to be local if the airport resides across a border with customs and passport control. Thus, we do not consider Hong Kong (Chep Lap Kok) to be a local airport for Shenzhen and we do not consider Vancouver International as being a local airport for Seattle.

variable denoting if a location pair has a direct flight in a given year. We lag this variable by one year (i.e., year 0 of the flight introduction retains a 0) since M&A deals take time to consummate. We will refer to our variable of interest as "Direct Flight" but note that the year of introduction is considered a non-direct flight year for our reported tests.[4] To evaluate the impact of the introduction of a direct flight on M&A activity, we use three different dependent variables: an indicator if any cross-border M&A transactions occurred, the number of transactions, and the total transaction amount for a given pair of locations in a given year. We conduct a number of sub-sample analyses to discern the effect of information asymmetry as well as to determine the relative importance of target selection and post acquisition monitoring. We further estimate the effect of a direct flight on the cumulative abnormal return (CAR) as well as the acquirer's Q in the years following the deal. We utilize the China Stock Market & Accounting Research Database (CSMAR) as our data source for the Chinese acquirers. COMPUSTAT and CRSP are used for our accounting and stock return data for U.S. acquirers.

We employ the following selection rules for cross-border M&A deals included in our analysis. The cross-border M&A data we use comes from the SDC database and CSMAR. We begin with all cross-border M&A deals between China and the U.S. from 2003 to 2016.[5] We require all deals to have reported transaction amounts as well as reported locations of the headquarters of the acquirer and target. In some cases of missing data, we are able to supplement the information from CSMAR and SDC by researching news reports. For the event study analysis,

[4] We have also estimated all of our specifications where year 0 is included (no lag) for non-stop direct flights. The results of this specification are very similar to those in our baseline tables, and they are suppressed to conserve space. We also present evidence of an expanded version of our baseline specifications where we trace out the impact of a non-stop direct flight over time, year by year, from 5 years prior to the flight introduction to 3 years after in Table 7.

[5] There is a large cluster of deals in 2016. In all of our models we include year fixed effects. To further check for robustness, we have estimated all of our baseline specifications excluding the data from 2016. These results are very similar to those reported in our baseline tables, and they are suppressed to conserve space.

we restrict the sample to deals where the acquirers are publicly listed and have the necessary return data. Chinese acquirers must be listed on the Chinese A stock market in order to calculate cumulative abnormal returns. These requirements provide a total of 299 deals, 211 with the data for the event study. Of those, 142 are Chinese acquisitions of U.S. targets and 69 are U.S. acquisitions of Chinese targets.

3. Identification Strategies and Empirical Results

In this section, we begin by presenting the main empirical strategies we employ to identify the impacts of reduction in the costs of information acquisition on potential cross-border M&A targets and monitoring of foreign subsidiaries as a result of the introduction of direct flights between pairs of Chinese-U.S. locations. In sub-section 3.2, we describe the data with univariate statistics. In sub-section 3.3, we present our main results and robustness tests. In sub-section 3.4, we present a number of cross-sectional tests to investigate the importance of the information gap and in sub-section 3.5, we analyze several performance measures.

3.1. Identification Strategies

We focus on three important outcome variables that measure the intensity of cross-border M&A flows between China and the U.S.: the likelihood of a cross-border M&A deal, the number of such deals, and the total volume (in U.S. dollar terms) of the cross-border M&A flows. In essence, our empirical strategy is a difference-in-differences model that compares the differences in a given cross-border M&A outcome between pairs of Chinese city - U.S. MSA that experience an introduction of a direct flight to pairs that do not, before and after the direct flight introduction. We begin by evaluating the impact of a direct flight on the likelihood of cross-border M&As. Specifically, we start by using the following linear probability model estimated via OLS:

$$M\&AEvent_{ijt} = \beta_1 * DirectFlight_{ijt} + \lambda_{ij} + \delta_{it} + \pi_{jt} + e_{ijt} \quad (1)$$

The dependent variable in equation (1) above, $M\&AEvent_{ijt}$ is an indicator variable equal to one if a cross-border M&A transaction within the pair *ij* occurs in year t. The acquirer (or the target) can be located in either country, i.e. the indicator is equal to one if there is at least one cross-border M&A deal, regardless of where the acquirer (or the target) is located. The treatment group is comprised of pairs of Chinese city-U.S. MSA that have experienced an introduction of a direct flight at some point in our sample period between 2003 and 2016. The control group, on the other hand, consists of pairs that did not experience a direct flight introduction, or had a flight prior to 2003, but are comparable in terms of population to the pairs that did.

The main variable of interest on the right-hand side is the indicator $DirectFlight_{ijt}$, which is equal to one if there exists a direct flight between the Chinese city i and the U.S. MSA j in year t. As previously discussed, we lag this variable by one year; i.e., we define the year of the flight introduction to equal 0. To control for time-invariant, pair-specific characteristics, our empirical model includes dyadic fixed effects, λ_{ij}. Further, to control for location-specific annual shocks, such as time-varying, local productivity, prices, or cost shocks, we also include location-specific year effects δ_{it} and π_{jt}. The usual assumptions hold for the error term, e_{ijt}. We compute heteroscedasticity robust standard errors that are clustered by Chinese city-U.S. MSA pair to account for heteroscedasticity and for any potential serial correlation pattern in the error term within a pair over time (Moulton, 1990; Bertrand, Duflo, and Mullainathan, 2004). We also estimate a logit (or a probit) model using Maximum Likelihood to check if our estimates are robust to alternative econometric specifications. Additionally, we employ econometric specification (1) above using the number and the (natural logarithm of) the total value (plus one), of all cross-border M&A deals as the dependent variables to evaluate the impact of the introduction of a direct flight on the number of all cross-border M&A deals and the total bilateral (dollar) value of all deals within a city-MSA pair in a given year. We add one to the total deal value because it can be zero. To check for robustness, we also employ a Poisson regression model, estimated via Maximum Likelihood to evaluate the impact of a direct flight on the number of cross-border M&A deals. The Poisson model is often employed when analyzing count data, such as the number of cross-border M&A deals. More specifically, we estimate the following Poisson model:

$$P(No\_M\&A\_Deals_{ijt} = n | \mu_{ijt}) = \frac{e^{-\mu_{ijt}} \mu_{ijt}^{n}}{n!}, \text{ for } n = 0, 1, 2, \ldots \quad (2),$$

where $P(No\_M\&A\_Deals_{ijt})$ is the probability that the number of cross border M&A deals that took place between Chinese city i and U.S. MSA j in year t is equal to n, and the mean μ_{ijt} is given by $\mu_{ijt} = exp(\alpha * DirectFlight_{ijt} + \lambda_{ij} + \delta_{it} + \pi_{jt})$. As before, we compute heteroscedasticity robust standard errors that are clustered by Chinese city-U.S. MSA pair.

When it comes to analyzing the bilateral volume (dollar value) of cross-border M&A flows, we follow Silva and Tenreyro (2006) and use a Poisson Pseudo Maximum Likelihood (PPML) model, akin to equation (2) above but with the total volume of cross-border M&A as the dependent variable. The PPML model is designed to estimate the multiplicative form of the

Gravity Equation of trade often used to model bilateral FDI or M&A flows, as well, and it can easily accommodate zero cross-border flows. Hence, using the PPML model does not require the use of a logarithmic transformation of the Gravity Equation for bilateral M&A flows, nor does it require adding one to zero flows so that they can be included in the estimation. In this case, the dependent variable in the estimated Poisson regression is the total bilateral value of all M&A deals within a pair in a given year. The estimated coefficient represents the percent increase in cross-border M&A flows following the introduction of a direct flight and it is directly comparable to the estimated coefficient from the log-linear model (1) estimated via OLS. We again compute heteroscedasticity robust standard errors that are clustered by Chinese city-U.S. MSA pair.

To evaluate the impact of the introduction of a direct flight on acquirer's performance, we use the event study specifications (3) and (4) below with a measure of acquirer's performance, CAR_{ijkt} (and Q_{ijkt}) as a dependent variable.

$$CAR_{ijkt} = \beta_1 * DirectFlight_{ijt} + \mu * X_{it} + \delta_j + \lambda_k + \gamma_t + e_{ijkt} \qquad (3)$$

$$Q_{ijkt} = \beta_1 * DirectFlight_{ijt} + \mu * Y_{it} + \delta_j + \lambda_k + \gamma_t + e_{ijkt} \qquad (4)$$

The first measure of the acquirer's performance we employ is the cumulative abnormal returns (CAR) associated with the announcement of the deal, with day 0 being the announcement date as reported in CSMAR or SDC. We use market-adjusted returns using the Hu Shen 300 index (Shanghai and Shenzhen) as the market index following Capron and Shen (2018), Fan et al. (2007) and Hirshleifer et al. (2018) for Chinese acquirers. For U.S. acquirers, we use standard market-model methodology, using the CRSP equal-weighted index as our market index. We relate the CARs and Qs to the existence of a direct flight between *i* and *j* in the year of the deal, *t* ($DirectFlight_{ijt}$) as well as a number of acquirer characteristics, X_{it} and Y_{it} as of year *t-1*. The matrix of control variables X_{it} and Y_{it} are noted in Tables 13 and 14. Industry of the acquirer time-invariant characteristics are captured by acquirer's industry fixed effect λ_k, while aggregate economy-wide shocks are absorbed by the year fixed effects, γ_t. Furthermore, δ_j is a target location fixed effect, which controls for target location time-invariant characteristics such as geographical location, climate, as well as entrepreneurial spirit and pro-growth attitudes. We assume that the error term, e_{ijkt}, is well behaved.

3.2. Summary Statistics

We report summary statistics for our sample in Table 2. In Panel A of Table 2, we report the incidence of cross-border M&A deals for our sample of Chinese city-U.S. MSA pairs, including both Chinese and U.S. acquirers. In total, this represents 300 deals over 8,400 city/MSA-pair-years. Two hundred and fourteen of these deals are in the 187 Direct Flight city/MSA-pair-years. For a given year, the likelihood of a location pair with an M&A deal is 3.0 percent, and the average volume (in U.S. dollars) of M&A deals for a pair of locations (including locations with no deals) is about $10 million (2016 U.S. dollars) annually. There are 113 deals completed over 8,213 city/MSA-pair- years with no direct flight. The univariate statistics draw a sharp contrast between pairs with and without (introduction of) a direct flight. However, we note that many of these city/MSA-pairs are unrealistic in either getting a direct flight or in having much China-U.S. M&A activity, necessitating a variety of fixed effect controls that we employ in our multivariate tests. Conditional on a city/MSA pair-year having a deal (untabulated), the average value of deals is $416 million for pairs with a direct flight, compared to $96 million for non-direct flight pairs, suggesting a higher cross-border M&A intensity associated with direct flights.

In Table 3, we report summary statistics by separating US acquirers and Chinese acquirers. There are somewhat more deals for Chinese acquirers but still much activity going both directions. In Table 4, we report the summary statistics for the publicly traded acquirers (which have the necessary data) that we employ for our performance analyses. Our event study examines the impact of direct flights on the acquirer's CAR and Q. The data that we use are reported in Panels A and B for the sample of deals with a direct flight between the pair of locations and the sample with no direct flight, respectively. Direct flight deals are received more favorably by investors as compared to non-direct flight deals. These firms enjoy a 2.4% three-day CAR (3.3% for five-day) relative to a near 0 reaction for the non-direct flight deals. The pattern of Qs tells a somewhat different story. Both subsets exhibit a decline in valuation following the cross-border M&A but the direct flight acquirers decline is of greater magnitude.

3.3. Baseline Results and Robustness Tests

We present our baseline results in Table 5 where we examine M&A activity in both directions between China and the U.S. The estimates in columns (1) and (2) show the impact of the introduction of a direct flight on the likelihood of (two-way) cross-border M&A activity between Chinese cities and U.S. MSAs throughout our sample period. We present the estimates of the effect of a direct flight on the number of cross-border deals in columns (3) and (4). The last two columns, (5) and (6), of Table 5 document the impact of a direct flight on the overall volume of cross-border M&A between pairs of Chinese cities and U.S. MSAs. In all models except the Logit in column (2), we include city-MSA pair fixed effects, as well as city-by-year and MSA-by-year effects to absorb any pair-specific but time-invariant factors, as well as location-specific and time-varying factors that could be correlated with the introduction of a direct flight. The city-by-year and MSA-by-year effects are omitted from the Logit model to allow the Maximum Likelihood algorithm to converge.

The coefficient from a linear probability model in column (1) implies that the introduction of a direct flight would lead to an average of 71.7 percent increase in the likelihood of a cross-border M&A deal for a pair. An alternative estimate from a Logit regression instead, in column (2), shows a similar, but somewhat smaller effect at about a 50 percent increase. This result is consistent with the univariate statistics in Panel A of Table 2, which shows that the likelihood of cross-border M&A activity for pair of cities with no direct flight is substantively smaller than it would have been had a direct flight existed. Our findings here indicate that after controlling for location and pair effects, the model confirms that direct flight introduction does matter.

This is our first finding that suggests that direct flight introductions have a greater effect on cross-border M&As, more so than other economic activity such as security selection for portfolio managers (Ellis et al., 2020) and capital allocation within internal capital markets (Giroud, 2013). Similarly, Da et al. (2021) find that improved domestic U.S. connections are associated with increased portfolio investments between locations, as well as a 19% increase in outright acquisitions. Our finding of a 71.7% increase indicates that direct international connections have a greater relative impact compared to changes in domestic routes.

The third and fourth columns of Table 5 present estimates of the impact of a direct flight introduction on the number of cross-border M&A deals. In column (3), we present the estimates from a standard OLS regression model, while in column (4) we present the results from a Poisson model, which is frequently used for count data. In both models, the impact of a direct flight on the number of cross-border M&A deals between China and U.S. is estimated to be positive and statistically significant at the 1 percent confidence level. The estimated OLS coefficient of 0.753 implies that a direct flight brings about three quarters additional deals annually. The Poisson model in the fourth column of Table 5 also implies a positive but a smaller magnitude – the estimated coefficient of 1.246 suggests that the difference in the logarithms of expected counts for pair of cities with a direct flight compared to a pair without a direct flight is 1.246. Given an average number of cross-border M&A transactions of 0.036 (see Panel A of Table 2), the Poisson estimate indicates that a direct flight is expected to lead to about 0.125 additional M&A transactions annually.

The final two columns of Table 5 present the estimated impact of an introduction of a direct flight between a Chinese city and a U.S. MSA on the total volume of cross-border M&A activity (in U.S. dollars). The results in both columns, estimated via OLS and Poisson Pseudo Maximum Likelihood (PPML, Silva and Tenreyro, 2006), respectively, imply that following the introduction of a direct flight, the total dollar value of cross-border M&A activity grows by about 480 percent.[6] This is not surprising, given the very low average value of about $10.390 million for Chinese-U.S. cross border M&A activity (see Panel A of Table 2). Moreover, note that on average, a pair of locations with no direct flight experience only about $1.713 million in cross-border M&A activity, while a pair of locations with a direct flight experience an average

[6] The OLS estimate of 1.760 in the fifth column implies that the impact is *exp*(1.760)-1=4.812 or 481.2 percent. We perform this calculation because the dependent variable is in logarithmic form and the independent variable is an indicator (see Halvorsen and Palmquist, 1980). The PPML (Poisson) estimate of 2.200 is interpreted as a percentage, i.e. the estimated impact is 220 percent.

cross-border M&A flow that is greater than $390 million. Our estimate implies that for the average pair with $10.390 million worth of M&A activity, the introduction of a direct flight will bring about an additional $50 million in cross-border M&A deals.[7]

One potential concern with estimating the effects of an introduction of a direct flight on cross-border M&A activity in close proximity of the airport is the possibility that the transaction may involve parties outside of the city's or the MSA's perimeter. For example, when a direct flight is introduced between Beijing and Chicago, this may facilitate a cross-border M&A deal originated by a Chinese company in Beijing that acquires a U.S. firm located in Rockford, IL, just outside Chicago's own MSA, about an hour drive northwest of Chicago's O'Hare International Airport. If we focus on cities and MSAs, as we have done in our baseline specifications in Table 5, we would exclude such cross-border transactions, and could potentially underestimate the impact of a direct flight.

In our first robustness check, we recast our empirical analysis by changing the unit of analysis from Chinese city-U.S. MSA pair into Chinese province-U.S. state pair. These geographical units of analysis, while not perfect, potentially better capture any cross-border M&A activity outside of the perimeter of the local city or MSA as a result of the direct flight introduction. Note, however, that in our baseline specification presented in Table 5, we used a sample of 40 U.S. MSAs and 15 Chinese cities only to make our analysis tractable. In this robustness check, on the other hand, we use all U.S. states and all Chinese provinces. Many U.S.

[7] We re-estimate these models using a smaller sample that consists only of pairs of locations that had a direct flight introduced at some point in the sample period. Hence, we have eliminated all control group pairs, i.e. all pairs of locations that never had a direct flight introduced, or had it all along from the start to the end of the sample period. The effect of the direct flight in this set-up is quite similar to that in the baseline specifications in Table 5. We suppress these results to conserve space; they are available from the authors upon request.

states and Chinese provinces have little cross-border M&A activity and no direct flights between them. Also, for some pairs of U.S. states and Chinese provinces, the impact of a direct flight, should one be introduced, could be very small because of their remote geographic location or low population density. Hence, using all pairs of Chinese provinces and U.S. states as the unit of observation may also lead to a lower estimate of the effect of direct flights on cross-border M&A. Note that restricting the set of provinces and states used to those corresponding to the 40 U.S. MSAs and 15 Chinese cities produces very similar results (untabulated) to those reported in Appendix Table A1, which include all provinces and states.

In Appendix Table A1, we re-estimate all of the baseline empirical models from Table 5 using the new unit of observation: Chinese provinces and U.S. states. Overall, we find that the effects of a direct flight on the likelihood of a cross-border M&A activity, the number of transactions, and the total volume of M&A deals in Appendix Table A1 are quite similar to those in Table 5. All of the estimates in Appendix Table A1 are positive and statistically significant at the 1 percent level. Two of the six coefficient estimates (columns (1) and (2)) are smaller than their counterparts in Table 5, whereas the rest are quite similar to the baseline results. As we discussed above, the smaller estimates are not surprising.

In Table 6 we return to our original unit of observation, city-MSA pair, and continue with our robustness checks. One potential concern with our baseline estimate is reverse causality. For example, direct flights may be introduced as a result of past growth in cross-border M&A activity between the two locations. It is also plausible that business leaders lobby for direct flights in anticipation of increased economic activity as well as cross-border M&A, between the two locations. To rule out this concern, we perform the following empirical test: we estimate our baseline regression equation (1) using only Chinese cities and U.S. MSA pairs that never had a direct flight throughout the sample period but benefited in terms of reduced flight time because of an introduction of a direct flight between a different pair of locations, similar to an identification strategy employed by Giroud (2013). These indirect improvements in travel allow us to more confidently identify the causal impact in our empirical setting, given that our econometric strategy already includes city pair and city-by-year fixed effects.

The explanatory variable of interest in these models is an indicator variable labeled Time Reduction, which is equal to 1 if a pair of locations does not have a direct flight but nevertheless experiences a reduction in travel (flight) time because a direct flight is introduced between another pair of locations (along a connecting route). The indicator variable is equal to zero for a pair if the travel time between the two locations has not changed as a result of an introduction of a direct flight between another pair. The summary statistics for the 7,896 non-direct flight, city-MSA observations are presented in Panel A of Table 6. Note that for the 171 pairs of locations that experienced a reduction in travel time throughout our sample period, cross-border M&A activity is noticeably higher than for the 7,725 pairs of locations that did not experience a reduction.

This empirical model is unlikely to suffer from reverse causality as it is implausible that a direct flight was introduced between a pair of locations in response to an increase of, or in anticipation of, M&A activity between another pair of locations. The results, which are presented in Panel B of Table 6, indicate that shorter travel time does have a positive impact on M&A activity, in terms of the likelihood of an M&A deal, the number of deals, and the total volume of deals. As expected, the positive effects here are generally smaller compared to the first order effect of introducing a direct flight between a pair of locations we documented in our baseline results in Table 5. Nonetheless, the effects are both statistically and economically significant, implying that if travel time declines, the number of cross-border M&A deals grows by about 0.11 and total volume increases by about 10 percent, as well, according to the estimates in columns (3) and (5).

Next, we perform two additional endogeneity tests. The first one deals with the issue of reverse causality and the second one tackles the potential problem of omitted variables. Both issues could undermine the causal interpretation of our estimates, so the results from these tests can further bolster confidence in our identification strategy and the causal interpretation of our estimates of the impact of direct flights on cross-border M&A activity between China and the U.S.

In Table 7, we present estimates from an expanded version of our baseline specifications. Specifically, we check for pre-existing trends in cross-border M&A activity in each baseline model presented in the first, third, and fifth column of Table 5, by tracing out the impact of a non-stop direct flight over time, year by year, from 5 years prior to the flight introduction to 3 years following it. If increased cross-border M&A activity between a Chinese city and a U.S. MSA results in the introduction of a direct flight, i.e. the causality is reversed, then the estimated coefficients on the year indicators prior to the flight introduction (5+ Years Before Direct Flight, 4th Year Before Direct Flight, …, 2nd Year Before Direct Flight) would be positive and growing in magnitude leading up to the year of flight introduction. Note that the omitted category (the baseline category) here is the year prior to flight introduction. Also, we combine all years prior to the 5th year before the flight was introduced into the '5+' category, just as we do with all years following the 3rd year after flight introduction, which are combined in the '3+' category. The results presented in Table 7 demonstrate that the coefficients on the year dummies prior to flight introduction are all very close to zero and never statistically significant, suggesting that reverse causality is not an issue. On the other hand, the coefficients on the year dummies after the flight introduction are all positive, large, and statistically significant, consistent with our baseline results in Table 5.

Another potential concern that could undermine the causal interpretation of our estimates of the impact of a direct flight on cross-border M&A activity is an omitted variables problem. Unobservable shocks that are omitted from our empirical model could be correlated with the introduction of direct flights throughout our sample period and could drive our results. To address this concern, we follow previous work by Guernsey et al. (2019), as well as Cornaggia et al. (2015), and we conduct a placebo test which checks if the estimated effect of a direct flight vanishes when we randomly match direct flights and pairs of locations according to the empirical distribution of direct flights we observe. To this end, we randomly (and without replacement) assign pairs of locations (out of all possible 600 pairs reflecting our 15 by 40 cities/MSAs) to a direct flight introduction year, following the empirical distribution of the introduction of direct flights between Chinese and U.S. locations given in Table 1. Thus, we maintain the distribution of the introduction years for direct flights from our baseline specification, but not the correct assignment of direct flight introduction years to the pairs of locations. This approach allows unobservable shocks correlated with the introduction of direct flights to remain in our empirical setting and affect the estimates. However, if no unobserved shocks exist, the estimated effect of a direct flight on cross-border M&A would be expected to be negligible under the random assignment.

We repeat the random assignment another 199 times, for a total of 200 simulations, and estimate all the 3 econometric models for each simulation to obtain a distribution of the coefficient on the direct flight indicator for each of the 3 specifications. We then plot the 3 densities for the coefficients in Panels A, B, and C of Figure 2. The vertical line to the right of each density is the respective coefficient obtained with the real data. In the first case, Panel A, where we use the indicator for cross-border M&A activity as a dependent variable, the average estimated coefficient over all 200 simulations is 0.001 (with a standard deviation of 0.025), which is much smaller than 0.717, the coefficient obtained with the real data. Panels B and C show similar results for the other two cases with the number of cross-border M&A deals and the total volume of cross-border M&A activity as the dependent variables. In all 3 cases, random assignment of direct flights generates an average impact of a direct flight that is practically 0, supporting the conclusion that the true impact is indeed positive and economically meaningful. Hence, both this and the previous test for endogeneity provide us with further confidence in our baseline estimates and support their causal interpretation.

Next, we consider any potential asymmetry of the estimated effects of a direct flight on cross-border M&A activity. Specifically, we assess if the impact of a direct flight for U.S. companies investing in China may differ from that for Chinese companies investing in the U.S. We separate our sample of cross-border M&A deals into two groups: deals by Chinese companies investing in the U.S. and deals by U.S. companies investing in China. We re-estimate the baseline regressions using these two separate sub-samples and present the results in Table 8. The results indicate positive and statistically significant effects on cross-border M&A

flows in both directions, i.e. for M&A deals initiated by Chinese companies, as well as M&A deals initiated by U.S. firms. While there are some differences in the estimated effects with the results from Chinese acquirers having somewhat greater magnitudes, the effects are pronounced in both directions, which further suggests that the positive impact is driven by the direct flight introduction, and not local economic conditions.

3.4. Cross-sectional Differences in the Costs of Information Acquisition

In this section, our aim is to provide more insight into the channel through which direct flights affect cross-border M&A activity. Our conjecture is that being on site with in-person meetings better allows for collection of valuable, costly soft information. Thus, reducing information barriers resulting from direct flight introductions can encourage new acquisition activity more so in cases where soft information is more important. Liberti and Petersen (2019) discuss that small firms or private firms are examples where soft information likely plays a relatively more important role as compared to hard (quantifiable and verifiable) information.

We divide our sample in several ways to test the impact of information gaps between acquirers and targets. In Table 9, we examine the impact of direct flights on diversifying deals; in Table 10, we investigate the differences between public and private targets; and in Table 11, we estimate the differences based on the size of the target. We then shed light on whether direct flights matter more for ex ante target selection or for ongoing, ex post monitoring through an examination of firms with multiple deals throughout our sample period.

We begin by dividing our sample based on the similarity in industrial activity, classified by their SIC industry code, between the acquirer and the target. Targets that are more familiar to the acquiring firms should have a relatively lower cost of information acquisition, and thus a relatively smaller impact from direct flights, relative to firms that are less familiar to the acquiring firm. If the two firms are classified in the same 4-digit (SIC) industry code, that should lead to a relatively lower cost of acquiring information for such horizontal M&A deals, and thus less relative benefit from a direct flight. The value of information acquisition is likely highest for transactions that involve parties with very different industrial activity, such as pairs that operate in different 2-digit (SIC) industry codes. As such, we expect that deals in the same industry (horizontal) will experience the least effect, deals in related, but not the same industry (vertical), will experience a greater effect, and unrelated industry targets will experience the greatest effect.

We define horizontal and vertical deals following Alfaro and Charlton (2009) and Ramondo et al. (2016). Horizontal deals are transactions between an acquirer and a target that share the same 4-digit industry classification code (SIC). In a vertical transaction, the acquirer and the target are classified in a different 4-digit SIC, but the share the same (broader) 2-digit SIC. As in Servaes (1996) and Hubbard and Palia (1999), we define the rest of the deals, those not in the same 2-digit SIC, as unrelated deals.

Each model in Table 9 represents a separate regression where we suppress all other controls except for the coefficient of our variable of interest (Direct Flight) to conserve space. Our findings are consistent with direct flights having differential effects based on the type of acquisition. The results reported in Table 9 indicate the effect of a direct flight is positive and statistically significant for all three types of M&A deals. However, the largest impact of a direct flight connection is estimated for the subset of unrelated M&A deals, the second largest impact is estimated for vertical M&A transactions, and the smallest for horizontal deals. These results are consistent with the notion that direct flights have a greater impact on deals where information acquisition costs are higher for the acquiring firm.

In Table 10, to further examine this issue, we estimate any potential differences in the impact of a direct flight between public and private targets. Private targets are more opaque and should require more due diligence relative to publicly traded targets, all else the same. As in Table 9, each model represents a separate regression only reporting the results of our variable of interest. We find that the coefficient on the direct flight indicator is positive but insignificant of publicly traded targets. In contrast, the impact of direct flights is large in magnitude and statistically significant in the case of private targets.

We continue by dividing our sample by target firm size. Large firms are more likely to be well-known with more information generally available. We separate large targets that we define as the top 25% in terms of book assets. As Tables 9 and 10, our results in Table 11 only report the coefficient for our variable of interest for each model. In our 3 models on large targets, the coefficients on Direct Flight are all positive, but none are statistically significant. In contrast, the 3 models that examine the bottom 3 quartiles (non-large targets), the coefficients for Direct Flight are all positive, greater in magnitude, and significant at the 1% confidence level. These findings on target size provide the same intuition as for unrelated targets (diversifying deals) and for private deals. Direct flights appear to matter more for targets where information asymmetries are greater.

The evidence so far indicates that direct flights matter for cross-border M&A activity. We also find evidence suggesting that one likely channel is through lowering the cost of information acquisition, as the impact of a direct flight on targets that are either less known to the acquirer (different industry) or are less known altogether (private or relatively smaller) is greater. However, a decline in information acquisition costs could be important either ex ante when identifying and assessing a target or ex post, while monitoring (and/or advising) target firm management. To shed light on this, in Table 12, we separate the sample into new and experienced acquirers. Our conjecture is that there is important learning in the first deal by an American (Chinese) firm in China (the U.S.). An acquiring firm will need to navigate the legal and regulatory issues, financing issues, and cultural norms, among other things. Once some of this technology is learned about the foreign market, the knowledge becomes transferable to the next deal. Therefore, the impact of information acquisition on target selection is most important for the first deal and declines thereafter. In contrast, monitoring needs should be determined by firm characteristics, not by the order of acquisition. Thus, if we observe a significant difference between the impact of the presence of a direct flight from the first deal by a firm to later deals, we can infer that ex ante target selection is relatively more important than ex post monitoring. If we do not observe a drop off in the impact of a direct flight, we can infer that ex post monitoring is just as important.

In Table 12, as in Tables 9 through 11, each model represents separate regressions where we only report the coefficient for our variable of interest, Direct Flight. In model (1), we only include 267 deals that we identify as the first for an acquiring firm. The coefficients on Direct Flight are positive and significant for all three of our dependent variables. In model (2), we restrict the deals to those that are not the first by a firm in the respective market (country), which represents 32 deals. In this case, while the coefficients on Direct Flight are positive, they are considerably smaller than those for the new acquirer models, and they are not always statistically significant. Finally, in model 3, we only include deals by acquirers which have previously invested in the same city (or MSA). We only identify 4 such transactions leaving little power for identification. Nonetheless, we report the results, which generally follow the expected pattern of positive but small effects of Direct Flight.

The evidence indicates that the costs of acquiring information is important for cross-border M&A and the presence of a direct flight matters. Kang and Kim (2008) examine partial block acquisitions in the U.S. and find evidence consistent with better monitoring for more proximate targets. In contrast, the evidence for U.S.-China cross-border deals indicates that the reduction of distance through a direct flight appears to matter more in target selection than for post-merger, ongoing monitoring.

3.5. Impact of Direct Flight on Abnormal Returns

We next turn to the effects of introducing a direct flight on the market's reaction to the deal announcement, and to the longer run valuation effects. The results from the econometric specifications (3) and (4) are presented in Tables 12 and 13 with CARs and Qs as dependent variables, respectively. Our vector of control variables follows the literature and data availability for the Chinese and U.S. acquirers. We follow Masulis et al. (2007) in our choice of control variables. We include firm characteristics such as Q, ROA, and Runup, that all help control for acquirer performance and valuation, along with other firm characteristics such as size (Ln(Assets)) and leverage (Debt/Assets). We control for various deal characteristics that could affect the market response such as the fraction acquired, deal size, and whether it is an all cash deal (Cash). We also include information if the deal is diversifying (Diversifying), which is an indicator equal to one if the transaction is either a vertical or unrelated M&A deal, as well as an indicator for a private target. All firm characteristics are measured in the year prior to the acquisition.

The first (second) column in Table 13 estimates the effect of a direct flight on the three-day (five-day) abnormal announcement returns. The coefficient on the direct flight indicator is economically large at 2.6 percent (4.2 percent), indicating that the markets are more receptive to deals where information acquisition costs are lower. In models (3) and (4) we interact Diversifying and Private with Direct Flight since these deals are more likely to involve greater information asymmetries. We do not discern a clear pattern in sign or significance on these interaction effects.

In Table 14, we use Q as the dependent variable and include a standard vector of control variables including the size of the firm, the size of the target, the firm's financial leverage, and fixed effects for target industry, year, and destination (city/MSA). We also include an indicator variable showing whether the target industry was different than the acquirer's (Non Horizontal) and whether the target was private. We do not find evidence that the presence of a direct flight has a long term effect on the value of a firm. We find some weak evidence that the interactions between Diversifying and Direct Flight (in year 0) and Private and Direct Flight (in year +1) have a positive effect on Q. However, the effect is short-lived. In total, we do find that the market reacts favorably to Direct Flight deals but we do not detect consistent longer run valuation effects.

Before we conclude, we offer a simple, back-of-the-envelope calculation. Based on the data, upon the introduction of a direct flight, the average travel time in our sample declines by about 7 hours for a round trip. Our baseline results suggest that the direct flight introduction brings about 0.75 new cross-border M&A transaction annually and about $50 million annual increase in M&A volume, which implies that a decline of 1 hour in travel time results in about $7 million additional cross-border M&A investment annually between a pair of locations in China and in the U.S.

4. Conclusion

The introduction of a direct flight between two geographic locations in two countries can significantly decrease travel time and make it easier for companies interested in cross-border mergers and acquisitions to collect information on perspective targets abroad. In this paper, we investigate this empirically using data on cross-border M&As between China and the U.S. during the period from 2003 to 2016. We find strong empirical evidence showing that an introduction of a direct flight between a Chinese city and a U.S. MSA leads to about 70 percent higher probability of an M&A event in a pair of locations. The results indicate that the introduction of a direct flight is associated with 0.75 new cross-border M&A transactions annually and about $50 million U.S. dollars annual increase in cross-border M&A volume in the pair of locations with a direct flight. Further, these direct flights matter more for deals involving industries that are less familiar to the acquiring firm and for deals involving less transparent, private firms. We show that these results are quite robust to different empirical specifications. We also demonstrate that endogeneity in the form of reverse causality or omitted variables is unlikely to drive the results. In particular, our estimates imply that when a new direct flight is introduced between a given pair of locations in China and the U.S., if this new direct flight also happens to reduce travel time between another pair of locations without direct flight, that pair also experiences a positive uptick in cross-border M&A activity.

The evidence from examining acquirers with multiple cross-border deals suggests that ex ante target selection is more likely to be the channel at play as opposed to ex post monitoring. We find that the markets are more receptive of deals that involve location pairs with direct flights as compared to deals without the benefit of a direct connection. However, we are unable to discern any longer run valuation impact. Our findings suggest that the decline in transaction information costs brought about by a new direct flight leads to more cross-border investments where information acquisition is more costly.

References

Alfaro, L., Charlton, A., 2009. Intra-industry Foreign Direct Investment. Am. Econ. Rev. 99 (5), 2096-2119.

Alimov, A., Officer, M., 2017. Intellectual Property Rights and Cross-border Mergers and Acquisitions. J. Corp. Finance. 45, 360-377.

Ahern, K., Daminelli, D., Fracassi, C., 2015. Lost in Translation? The Effect of Cultural Values on Mergers around the World. J. Finance. Econ. 117 (1), 165-189.

Antras, P., Garicano, L., Rossi-Hansberg, E., 2006. Offshoring in a Knowledge Economy. Q. J. Econ. 121 (1), 31-77.

Bauer, F., Matzler, K., 2014. Antecedents of M&A Success: The Role of Strategic Complementarity, Cultural Fit, and Degree and Speed of Integration. Strategic Management J. 35 (2), 269-291.

Bernstein, S., Giroud, X., Townsend, R., 2016. The Impact of Venture Capital Monitoring. J. Finance. 71 (4), 1591-1622.

Bertrand, M., Duflo, E., Mullainathan, S., 2004. How Much Should We Trust Differences-In-Differences Estimates? Q. J. Econ. 119 (1), 249-275.

Brueckner, J., 2003. Airline Traffic and Urban Economic Development. Urban Stud. 40 (8), 1455-1469.

Buckley, P., Clegg, J., Cross, A., Liu, X., Voss, H., Zheng, P., 2007. The Determinants of Chinese Outward Foreign Direct Investment. J. Int. Bus. Stud. 38 (4), 499-518.

Cai, Y., Tian, X. and Xia, H., 2016. Location, Proximity, and M&A transactions. J. Econ. Management Strat., 25 (3), 688-719.

Campante, F., Yanagizawa-Drott, D., 2018. Long-Range Growth: Economic Development in the Global Network of Air Links. Q. J. Econ. 133 (3), 1395-1458.

Capron, L., Shen, J-C., 2018. Acquisitions of Private vs. Public Firms: Private Information, Target Selection, and Acquirer Returns. Strategic Management J. 28 (9), 891-911.

Charnoz, P., Lelarge, C., Trevien, C., 2018. Communication Costs and the Internal Organization of Multi-plant Business: Evidence from the Impact of the French High-speed Rail. Econ. J. 128, 949-994.

Cornaggia, J., Mao, Y., Tian, X., Wolfe, B., 2015. Does Banking Competition Affect Innovation? J. Financial. Econ. 115 (1), 189-209.

Cristea, A. 2011. Buyer-seller Relationships in International Trade: Evidence from U.S. States' Exports and Business-class Travel. J. Int. Econ. 84 (2), 207-220.

Da, Z., Gurun, U., Li, B., Warachka, M., 2021. Investment in a Smaller World: The Implications of Air Travel for Investors and Firms. Management Sci. 67 (1), 417-435.

Donaldson, D., 2018. Railroads of the Raj: Estimating the Impact of Transportation Infrastructure. Am. Econ. Rev. 108 (4-5), 899-934.

Donaldson, D., Hornbeck, R., 2016. Railroads and American Economic Growth: A "Market Access" Approach. Q. J. Econ. 131 (2), 799-858.

Eckbo, B. and Thorburn, K., 2000. Gains to Bidder Firms Revisited: Domestic and Foreign Acquisitions in Canada. J. Financial. Quant. Anal. 35 (1),1-25.

Ellis, J., Madureira, L., Underwood, S., 2020. The Causal Effects of Proximity on Investment: Evidence from Flight Introductions. J. Financial. Quant. Anal. 55 (6), 1978-2004.

Fan, J., Wong, T., Zhang, T., 2007. Politically Connected CEOs, Corporate Governance, and Post-IPO Performance of China's Newly Partially Privatized Firms. J. Financial. Econ. 84 (2), 330-357.

Giroud, X., 2013. Proximity and Investment: Evidence from Plant-Level Data. Q. J. Econ. 128 (2), 861-915.

Green, R., 2007. Airports and Economic Development. Real Estate Econ. 35 (1), 91-112.

Guernsey, S., John, K., Litov, L., 2019. Keeping Secrets from Creditors: The Uniform Trade Secrets Act and Financial Leverage. Working Paper.

Halvorsen, R., Palmquist, R., 1980. The Interpretation of Dummy Variables in Semilogarithmic Equations. Am. Econ. Rev. 70 (3), 474-475.

Hirshleifer, D., Jian, M., Zhang, H., 2018. Superstition and Financial Decision Making. Management Sci. 64 (1), 235-252.

Huang, P., Officer, M., Powell, R. 2016. Method of Payment and Risk Mitigation in Cross-border Mergers and Acquisitions. J. Corp. Finance. 40, 216-234.

Hubbard, R., Palia, D., 1999. A Reexamination of the Conglomerate Merger Wave in the 1960s: An Internal Capital Markets View. J. Finance. 54 (3), 1131-1152.

Kandilov, I., Leblebcioglu, A., 2020. Trade Secrets Protection and Foreign Investment. Working paper.

Kang, J. and Kim, J., 2008. The Geography of Block Acquisitions. J. Finance, 63 (6), 2817-2858.

Kengelbach, J., Schwetzler, B., Sperling, M., 2010. How Does Geographical and Legal Proximity Affect the Performance of M&A Transactions?. J. Gen. Management, 35 (3), 81-97.

Liang, H., Renneboog, L., Vansteenkiste, C., 2020. Cross-border Acquisitions and Employment Policies. J. Corp. Finance. 62, 15-29.

Liberti, J., Petersen, M., 2019. Information: Hard and soft. R. Corp. Finance Stud. 8 (1), 1-41.

Lim, J., Makhija, A., Shenkar, O., 2016. The Asymmetric Relationship Between National Cultural Distance and Target Premiums in Cross-border M&A. J. Corp. Finance. 41, 542-571.

Masulis, R., Wang, C., Xie, F., 2007. Corporate Governance and Acquirer Returns. J. Finance, 62 (4), 1851-1889.

Moulton, B., 1990. An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units. Rev. Econ. Stat. 72 (2), 334-338.

Pascali, L., 2017. The Wind of Change: Maritime Technology, Trade and Economic Development. Am. Econ. Rev. 107 (9), 2821-2854.

Portes, R., Rey, H., 2005. The Determinants of Cross-border Equity Flows. J. Int. Econ. 65, 269-296.

Ramondo, N., Rappoport, V., Ruhl, K., 2016. Intra-firm Trade and Vertical Fragmentation in U.S. Multinational Corporations. J. Int. Econ. 98, 51-59.

Schweizer, D., Walker, T., Zhang, A., 2019. Cross-border Acquisitions by Chinese Enterprises: The Benefits and Disadvantages of Political Connections. J. Corp. Finance. 57, 63-85.

Servaes, H., 1996. The Value of Diversification During the Conglomerate Merger Wave. J. Finance. 51 (4), 1201-1225.

Silva, J., Tenreyro, S., 2006. The Log of Gravity. Rev. Econ. Stat. 88 (4), 641-658.

Soderlund, B., 2019. The Importance of Business Travel for Trade: Evidence from the Liberalization of the Soviet Airspace. Working Paper.

Stahl, G., Voigt, A., 2008. Do Cultural Differences Matter in Mergers and Acquisitions? A Tentative Model and Examination. Organization Sci. 19 (1), 160-176.

Uysal, V., Kedia, S., Panchapagesan, V., 2008. Geography and Acquirer Returns. J. Financial. Intermediation. 17 (2), 256-275.

Xu, E., 2017. Cross-border Merger Waves. J. Corp. Finance. 46, 207-231.

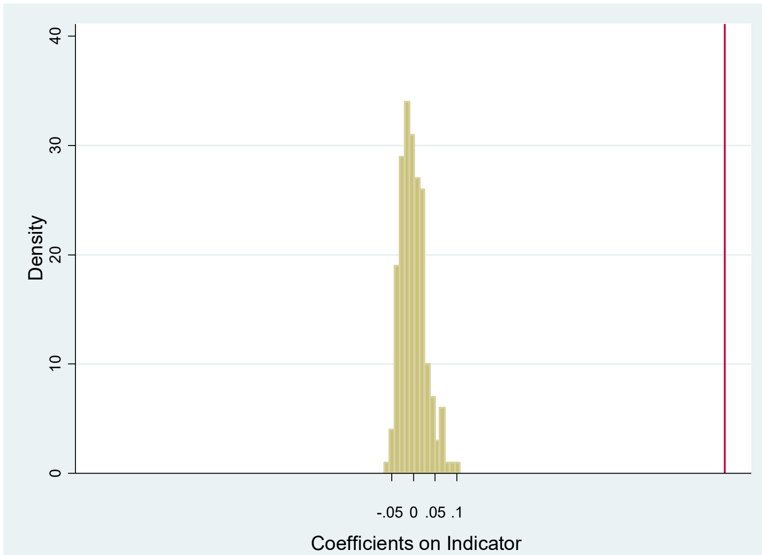
Yilmazkuday, D., Yilmazkuday, H., 2017. The Role of Direct Flights in Trade Costs. Rev. World Econ. 153, 249-270.

FIGURES

Figure 1: The Number of Cross-border M&A Transactions between China and U.S., 2003 to 2016

Figure 2: Distribution of the Coefficients on Direct Flight with Simulated Data (Random Assignment of Direct Flights).

Panel A: The Distribution of the Coefficient on Direct Flight with the Indicator for Cross-border M&A Activity as the Dependent Variable. The Vertical Line Indicates the Coefficient Obtained with Real Data.



Panel B: The Distribution of the Coefficient on Direct Flight with the Number of Cross-border M&A Deals as the Dependent Variable. The Vertical Line Indicates the Coefficient Obtained with Real Data.

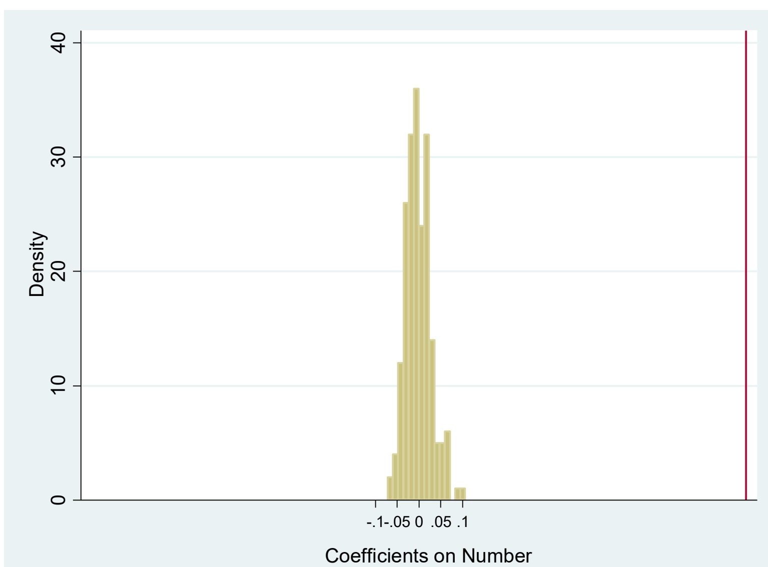
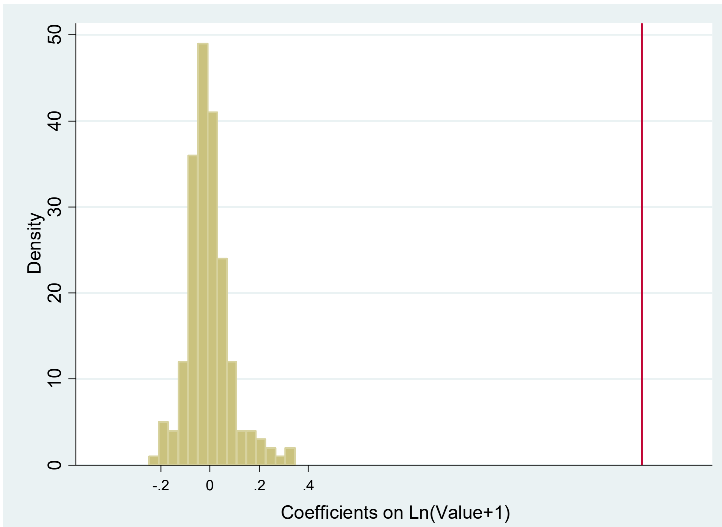


Figure 2: Distribution of the Coefficients on Direct Flight with Simulated Data (Random Assignment of Direct Flights), *continued*

Panel C: The Distribution of the Coefficient on Direct Flight with the Volume of Cross-border M&A Activity as the Dependent Variable. The Vertical Line Indicates the Coefficient Obtained with Real Data.



TABLES

Table 1: The Chronology of Introduction of Non-stop Direct Flights

Panel A presents all non-stop direct flights between Chinese Cities and U.S. MSAs that were introduced prior to 2003. Panel B lists all non-stop direct flights between Chinese Cities and U.S. MSAs that were introduced from 2004 to 2016. Population (as of 2010) in parentheses.

Panel A: Prior to 2003		
Beijing (16.44 million)	NY-NJ-PA (18.92 million)	
Beijing (16.44 million)	LA-Long Beach-Anaheim (12.84 million)	
Beijing (16.44 million)	San Francisco-Oakland-Hayward (4.34 million)	
Guangzhou (12.78 million)	LA-Long Beach-Anaheim (12.84 million)	
Shanghai (20.31 million)	LA-Long Beach-Anaheim (12.84 million)	
Shanghai (20.31 million)	San Francisco-Oakland-Hayward (4.34 million)	

Panel B:From 2003 to 2016		
Shanghai (20.31 million)	IL-IN-WI (9.47 million)	2004
Beijing (16.44 million)	Washington-Arlington-Alexandria (4.47 million)	2006
Shanghai (20.31 million)	Detroit-Warren-Dearborn (4.29 million)	2006
Shanghai (20.31 million)	NY-NJ-PA (18.92 million)	2006
Shanghai (20.31 million)	Atlanta-Sandy Springs-Roswell (5.30 million)	2007
Shanghai (20.31 million)	Seattle-Tacoma-Bellevue (3.45 million)	2008
Beijing (16.44 million)	Detroit-Warren-Dearborn (4.29 million)	2009
Beijing (16.44 million)	IL-IN-WI (9.47 million)	2009
Beijing (16.44 million)	Seattle-Tacoma-Bellevue (3.45 million)	2009
Shanghai (20.31 million)	Washington-Arlington-Alexandria (4.47 million)	2009
Beijing (16.44 million)	Boston-Cambridge-Newton (4.57 million)	2014
Beijing (16.44 million)	Houston-The Woodlands-Sugar Land (5.95 million)	2014
Chengdu (7.57 million)	San Francisco-Oakland-Hayward (4.34 million)	2014
Guangzhou (12.78 million)	NY-NJ-PA (18.92 million)	2014
Shanghai (20.31 million)	Dallas-Fort Worth-Arlington (6.39 million)	2014
Beijing (16.44 million)	Dallas-Fort Worth-Arlington (6.39 million)	2015
Beijing (16.44 million)	San Jose-Sunnyvale-Santa Clara (1.84 million)	2015
Nanjing (6.16 million)	LA-Long Beach-Anaheim (12.84 million)	2015
Shanghai (20.31 million)	Boston-Cambridge-Newton (4.57 million)	2015
Wuhan (7.52 million)	San Francisco-Oakland-Hayward (4.34 million)	2015
Beijing (16.44 million)	Las Vegas-Henderson-Paradise (1.95 million)	2016
Changsha (3.19 million)	LA-Long Beach-Anaheim (12.84 million)	2016
Chongqing (11.24 million)	LA-Long Beach-Anaheim (12.84 million)	2016
Fuzhou (7.12 million)	NY-NJ-PA (18.92 million)	2016
Jinan (3.97 million)	LA-Long Beach-Anaheim (12.84 million)	2016
Qingdao (8.72 million)	San Francisco-Oakland-Hayward (4.34 million)	2016
Shanghai (20.31 million)	San Jose-Sunnyvale-Santa Clara (1.84 million)	2016
Shenzhen (9.83 million)	Seattle-Tacoma-Bellevue (3.45 million)	2016
Xiamen (3.04 million)	LA-Long Beach-Anaheim (12.84 million)	2016
Xiamen (3.04 million)	San Francisco-Oakland-Hayward (4.34 million)	2016

Table 2: Summary Statistics for Cross-border M&As and US MSA-Chinese City Pairs

In Panel A, summary statistics are reported for sample U.S. MSA-Chinese City pairs, total, and by direct flight status. In Panel B, statistics are reported conditional on M&A activity in the US MSA-Chinese City pair-year. M&A Event is an indicator variable equal to one if at least one M&A deal occurs in the US MSA-Chinese city pair-year, zero otherwise. Number is the count of cross-border M&As in a US MSA-Chinese city pair-year. Value is the total transaction value in 2016 US dollars for a US MSA-Chinese city pair-year. T-tests compare Direct Flight subgroups in both panels. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

Panel A: (US MSA-Chinese City Pair)*Year				
(N = 8,400)				
	Mean	St. Dev.	Min	Max
M&A Event	0.030**	0.171	0	1
Number	0.036**	0.218	0	4
Value	10.390	261.883	0	18,500
Lag Direct Flight = 1 (N = 187)				
M&A Event	0.920***	0.272	0	1
Number	1.144***	0.592	0	4
Value	391.482***	1652.895	0	18,500
Lag Direct Flight = 0 (N = 8213)				
M&A Event	0.010	0.098	0	1
Number	0.010	0.110	0	3
Value	1.713	69.868	0	5,649.77

Panel B: t-test for the difference in M&A activity (given positive activity) between pairs of locations with a non-stop direct flight and those without one	Number (Mean)	St. Error of the Mean	Value (Mean)	St. Error of the Mean
Lag Direct Flight = 1	1.228***	0.036	416.18***	118.19
Lag Direct Flight = 0	1.055***	0.031	96.159***	31.348
Difference	0.173***	0.048	320.021**	122.277

Table 3: Summary Statistics by US Acquirers and Chinese Acquirers

In Panel A, summary statistics are reported for U.S. acquirers and Chinese targets. In Panel B, are summary statistics for Chinese acquirers and U.S. targets. M&A Event is an indicator variable equal to one if at least one M&A deal occurs in the US MSA-Chinese city pair-year, zero otherwise. Number is the count of cross-border M&As in a US MSA-Chinese city pair-year. Value is the total transaction value in 2016 US dollars for a US MSA-Chinese city pair-year.

Panel A: US Acquirers – Chinese Targets	Mean	σ	Min	Max
M&A Event	0.012	0.100	0	1
Number	0.017	0.109	0	2
Value	1.258	42.983	0	2,500

Panel B: Chinese Acquirers – US Targets	Mean	σ	Min	Max
M&A Event	0.018	0.139	0	1
Number	0.019	0.156	0	3
Value	6.355	229.776	0	18,450

Table 4 Summary Statistics on Returns

Table reports summary statistics on CARs and Tobin's Q. CAR(-n, n) is the cumulative abnormal return with day 0 being the deal announcement. CARs for U.S. acquirers are calculated using market models, parameters estimated from -300 to -46 with CRSP EW index. Chinese acquirer CARs are market-adjusted returns using the Hu Shen 300 index. Q is the market value of equity plus the book value of long term debt (including the short term portion) divided by the book value of assets. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels comparing direct flight subgroups. The significance of differences in means based on t-tests

Summary Statistics (N = 211)	
Lag Direct Flight = 1 (N = 69)	**Average**
CAR (-1,1)	0.024***
CAR (-2,2)	0.033***
Lag Direct Flight = 0 (N = 142)	
CAR (-1,1)	0.004
CAR (-2,2)	-0.001
Summary Statistics for Q (N = 142)	
Lag Direct Flight = 1 (N = 69)	**Average**
Q (-1)	2.953***
Q (0)	2.800***
Q (1)	2.011***
Q (2)	1.886***
Q (3)	1.672***
Lag Direct Flight = 0 (N = 142)	
Q (-1)	2.152***
Q (0)	2.143***
Q (1)	1.782***
Q (2)	1.679***
Q (3)	1.676***

Table 5: Regressions on Cross-border M&As and Direct Flights at MSA-City Levels

Regression results are reported for the non-stop direct flight and cross-border M&As in US MSA-Chinese city pair-years. Standard error of the coefficient clustered by the city pair is shown in parentheses. The marginal effect is reported in the Logit model regression. M&A Event is an indicator variable equal to one if at least one M&A deal occurs in the US MSA-Chinese city pair-year, zero otherwise. Number is the count of cross-border M&As in a US MSA-Chinese city pair-year. Value is the total transaction value in 2016 US dollars for a US MSA-Chinese city pair-year. Direct Flight is an indicator variable equal to one if a direct non-stop flight connects the MSA-city pair during the sample year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

Dependent Variable	M&A Event	M&A Event	Number	Number	Ln(Value+1)	Value
Model	OLS	Logit	OLS	Poisson	OLS	Poisson
	(1)	(2)	(3)	(4)	(5)	(6)
Lag Direct Flight	0.717***	0.472**	0.753***	1.246***	1.760***	2.200***
	(0.032)	(0.214)	(0.043)	(0.269)	(0.257)	(0.157)
Pair Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
City*Year FE	Yes	No	Yes	Yes	Yes	Yes
MSA*Year FE	Yes	No	Yes	Yes	Yes	Yes
R^2	0.726		0.739		0.593	
F test	492.20***	6.91***	301.08***		47.08***	
$WaldChi^2$				782.38***		610.32***
N	8,400	8,400	8,400	8,400	8,400	8,400

Table 6: Reduction in Flight Time

Panel A reports summary statistics are reported by reduction of flight time. US MSA-Chinese City pair-years with direct flights are excluded. Time Reduction is the indicator variable equal to one where the flight time between the Chinese city and US MSA decreases following the introduction of an indirect connection. M&A Event is an indicator variable equal to one if at least one M&A deal occurs in the US MSA-Chinese city pair-year, zero otherwise. Number is the count of cross-border M&As in a US MSA-Chinese city pair-year. Value is the total transaction value in 2016 US dollars for a US MSA-Chinese city pair-year. T-tests compare Time Reduction subgroups in both panels. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels. Panel B reports regression results for the reduction of flight time and cross-border M&As in US MSA-Chinese city pair-years. Standard error of the coefficient clustered by the city pair is shown in parentheses. The marginal effect is reported in the Logit model regression. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

Panel A

Lag Time Reduction = 1 (N = 171)	mean	σ	min	max
M&A Event	0.093***	0.022	0	1
Number	0.093***	0.022	0	1
Value	0.150***	0.046	0	4.3

Lag Time Reduction = 0 (N = 7725)	mean	σ	min	max
M&A Event	0.002	0.000	0	1
Number	0.002	0.000	0	2
Value	0.160	0.069	0	335

Panel B Dependent Variable Model	M&A Event OLS (1)	M&A Event Probit (2)	Number OLS (3)	Number Poisson (4)	Ln(Value+1) OLS (5)	Value Poisson (6)
Lag Time Reduction	0.111***	0.612***	0.111***	4.002***	0.095***	0.083*
	(0.027)	(0.100)	(0.027)	(1.727)	(0.025)	(0.045)
Pair Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
City*Year FE	Yes	No	Yes	Yes	Yes	Yes
MSA*Year FE	Yes	No	Yes	Yes	Yes	Yes
(Pseudo) R^2	0.303		0.300		0.278	
WaldChi^2				128.07***		173.11***
F test	15.79***	112.12	15.72***		13.16***	
N	7,896	7,896	7,896	7,896	7,896	7,896

Table 7. Endogeneity Test

Regression results are reported for the non-stop direct flight and cross-border M&As in US MSA-Chinese city pair-years. All models are estimated using OLS and the standard error of the coefficient clustered by the city pair is shown in parentheses. M&A Event is an indicator variable equal to one if at least one M&A deal occurs in the US MSA-Chinese city pair-year, zero otherwise. Number is the count of cross-border M&As in a US MSA-Chinese city pair-year. Value is the total transaction value in 2016 US dollars for a US MSA-Chinese city pair-year. Direct Flight is an indicator variable equal to one if a direct non-stop flight connects the MSA-city pair during the sample year. The yearly indicator variables are equal to 1 during the relevant year(s) relative to the year of the direct flight adoption. The year prior to adoption (1st year Before Direct Flight) is excluded as the base year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

Dependent Variable	M&A Event (1)	Number (2)	Ln(Value+1) (3)
5+ Years Before Direct Flight	0.036	0.054	0.137
	(0.028)	(0.050)	(0.167)
4th Year Before Direct Flight	0.021	0.065	-0.021
	(0.025)	(0.051)	(0.153)
3rd Year Before Direct Flight	0.073	0.058	0.160
	(0.053)	(0.052)	(0.145)
2nd Year Before Direct Flight	-0.005	-0.016	0.023
	(0.015)	(0.019)	(0.092)
Year of Direct Flight Adoption	0.727***	0.845***	1.238***
	(0.089)	(0.138)	(0.274)
1st Year After Direct Flight	0.828***	0.861***	1.937***
	(0.070)	(0.086)	(0.403)
2nd Year After Direct Flight	0.878***	0.970***	1.611***
	(0.069)	(0.112)	(0.373)
3+ Years After Direct Flight	0.965***	1.024***	2.169***
	(0.031)	(0.053)	(0.403)
Pair Fixed Effect	Yes	Yes	Yes
City*Year FE	Yes	Yes	Yes
MSA*Year FE	Yes	Yes	Yes
R^2	0.521	0.462	0.276
N	8,400	8,400	8,400

Table 8: Regressions by Directional Subgroups

Regression results from the baseline OLS model are reported for the non-stop direct flights and cross-border M&As in US MSA-Chinese city pair-years. Columns (1), (2), and (3) report U.S. acquirers and Chinese targets, and columns (4), (5), and (6) report Chinese acquirers and U.S. targets. Standard error of the coefficient clustered by the city pair is reported in parentheses. M&A Event is an indicator variable equal to one if at least one M&A deal occurs in the US MSA-Chinese city pair-year, zero otherwise. Number is the count of cross-border M&As in a US MSA-Chinese city pair-year. Value is the total transaction value in 2016 US dollars for a US MSA-Chinese city pair-year. Lag Direct Flight is the lag of an indicator variable equal to one if a direct non-stop flight connects the MSA-city pair during the current year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

	U.S. Companies investing in China			Chinese Companies investing in the U.S.		
Dependent Variable	M&A Event	Number	Ln(Value+1)	M&A Event	Number	Ln(Value+1)
	(1)	(2)	(3)	(4)	(5)	(6)
Lag Direct Flight	0.223***	0.256***	0.562***	0.548***	0.568***	1.577***
	(0.034)	(0.045)	(0.150)	(0.043)	(0.050)	(0.231)
Pair Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
City*Year FE	Yes	Yes	Yes	Yes	Yes	Yes
MSA*Year FE	Yes	Yes	Yes	Yes	Yes	No
R^2	0.505	0.510	0.393	0.608	0.615	0.508
F test	42.54***	32.74***	14.10***	165.38***	129.12***	46.48***
N	8,400	8,400	8,400	8,400	8,400	8,400

Table 9: Regressions by Deals Type Subgroups

Regression results are reported for the non-stop direct flight and cross-border M&As in US MSA-Chinese city pair-years. Results for Direct Flight indicator variable is reported for each model, all other variables are suppressed. The dependent variable in model (1) are associated with horizontal deals where the target's primary 4-digit SIC is the same as the acquirer. The dependent variable in model (2) are associated with vertical deals where the target and acquirer have the same primary 2-digit SIC but are in different 4-digit SIC. The dependent variable in model (3) are associated with all deals that are neither horizontal nor vertical (unrelated). Standard error of the coefficient clustered by the city pair is shown in parentheses. The marginal effect is reported in the Logit model regression. M&A Event is an indicator variable equal to one if at least one M&A deal occurs in the US MSA-Chinese city pair-year, zero otherwise. Number is the count of cross-border M&As in a US MSA-Chinese city pair-year. Value is the total transaction value in 2016 US dollars for a US MSA-Chinese city pair-year. Direct Flight is an indicator variable equal to one if a direct non-stop flight connects the MSA-city pair during the sample year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

Dependent Variable	M&A Event (1)	Number (2)	Ln(Value+1) (3)
Coefficient on Lag Direct Flight			
Model (1) – Horizontal M&A Deals	0.191***	0.210***	0.227**
	(0.061)	(0.068)	(0.137)
Model (2) – Vertical M&A Deals	0.370***	0.377***	0.505***
	(0.061)	(0.061)	(0.097)
Model (3) – Unrelated M&A Deals	0.581***	0.584***	1.197***
	(0.054)	(0.068)	(0.310)
Pair Fixed Effect	Yes	Yes	Yes
City*Year FE	Yes	Yes	Yes
MSA*Year FE	Yes	Yes	Yes
N	8,400	8,400	8,400

Table 10: Impact on Public vs. Private Targets

Regression results are reported for the non-stop direct flight and cross-border M&As in US MSA-Chinese city pair-years. Results for Direct Flight indicator variable is reported for each model, all other variables are suppressed. The dependent variable in model (1) is associated with public targets. The dependent variable in model (2) is associated with private targets. Standard error of the coefficient clustered by the city pair is shown in parentheses. The marginal effect is reported in the Logit model regression. M&A Event is an indicator variable equal to one if at least one M&A deal occurs in the US MSA-Chinese city pair-year, zero otherwise. Number is the count of cross-border M&As in a US MSA-Chinese city pair-year. Value is the total transaction value in 2016 US dollars for a US MSA-Chinese city pair-year. Direct Flight is an indicator variable equal to one if a direct non-stop flight connects the MSA-city pair during the sample year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

Dependent Variable	M&A Event (1)	Number (2)	Ln(Value+1) (3)
Coefficient on Lag Direct Flight			
Model (1) – Public Targets	0.040	0.028	0.136
	(0.043)	(0.058)	(0.232)
Model (2) – Private Targets	0.682***	0.723***	1.718***
	(0.052)	(0.054)	(0.288)
Pair Fixed Effect	Yes	Yes	Yes
City*Year FE	Yes	Yes	Yes
MSA*Year FE	Yes	Yes	Yes
N	8,400	8,400	8,400

Table 11: Impact on Large vs. Non-large Targets

Regression results are reported for the non-stop direct flight and cross-border M&As in US MSA-Chinese city pair-years. Results for Direct Flight indicator variable is reported for each model, all other variables are suppressed. The dependent variable in model (1) is associated with large deals (top quartile by target assets). The dependent variable in model (2) is associated with non-large deals (bottom three quartiles by target assets). Standard error of the coefficient clustered by the city pair is shown in parentheses. The marginal effect is reported in the Logit model regression. M&A Event is an indicator variable equal to one if at least one M&A deal occurs in the US MSA-Chinese city pair-year, zero otherwise. Number is the count of cross-border M&As in a US MSA-Chinese city pair-year. Value is the total transaction value in 2016 US dollars for a US MSA-Chinese city pair-year. Direct Flight is an indicator variable equal to one if a direct non-stop flight connects the MSA-city pair during the sample year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

Dependent Variable	M&A Event (1)	Number (2)	Ln(Value+1) (3)
Coefficient on Lag Direct Flight			
Model (1) – Large Deals	0.022	0.004	0.137
	(0.034)	(0.044)	(0.221)
Model (2) – Non-large Deals	0.712***	0.777***	1.574***
	(0.049)	(0.045)	(0.209)
Pair Fixed Effect	Yes	Yes	Yes
City*Year FE	Yes	Yes	Yes
MSA*Year FE	Yes	Yes	Yes
N	8,400	8,400	8,400

Table 12: Impact on New Investors vs. Experienced Investors

Regression results are reported for the non-stop direct flight and cross-border M&As in US MSA-Chinese city pair-years. Results for Direct Flight indicator variable is reported for each model, all other variables are suppressed. The dependent variable in model (1) denotes the first deal in China (US) for US (Chinese) firms. The dependent variable in model (2) denotes a second or greater deal for deals in China (US) for US (Chinese) firms. The dependent variable in model (3) denotes a second or greater deal in the same Chinese city (or US) MSA for the foreign firm. Standard error of the coefficient clustered by the city pair is shown in parentheses. The marginal effect is reported in the Logit model regression. M&A Event is an indicator variable equal to one if at least one M&A deal occurs in the US MSA-Chinese city pair-year, zero otherwise. Number is the count of cross-border M&As in a US MSA-Chinese city pair-year. Value is the total transaction value in 2016 US dollars for a US MSA-Chinese city pair-year. Direct Flight is an indicator variable equal to one if a direct non-stop flight connects the MSA-city pair during the sample year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

Dependent Variable	M&A Event (1)	Number (2)	Ln(Value+1) (3)
Coefficient on Lag Direct Flight			
Model (1) – New Investors	0.638***	0.688***	1.750***
	(0.049)	(0.044)	(0.247)
Model (2) – Invested elsewhere in China/U.S. before	0.078**	0.065*	0.143
	(0.031)	(0.037)	(0.164)
Model (3) –Invested in the Same City/MSA before	0.048*	0.078	0.242
	(0.028)	(0.048)	(0.148)
Pair Fixed Effect	Yes	Yes	Yes
City*Year FE	Yes	Yes	Yes
MSA*Year FE	Yes	Yes	Yes
N	8,400	8,400	8,400

Table 13: Regressions on Abnormal Announcement Returns

Regressions results for the abnormal announcement returns. CAR(-n, n) is the cumulative abnormal return with day 0 being the deal announcement. For US firms, CARs are market-model abnormal returns using CRSP EW index. For Chinese firms, CARs are market-adjusted abnormal returns using the Hu Shen 300 index. All firm characteristics reflect the year-end prior to the announcement date. Lag Direct Flight is an indicator variable equal to one if a direct non-stop flight connects the MSA-city pair one year prior to the sample year. Q is the market value of equity plus the book value of long term debt (including the short term portion) divided by the book value of assets. ROA is operating income before depreciation divided by the book value of assets. Runup are the raw stock returns in the 12 months preceding the M&A. Cash is an indicator denoting if the acquisition was an all cash deal. Debt is total liabilities. Assets are book value of assets. Non Horizontal is an indicator for all targets not in the acquirer's primary 4-digit SIC. Private is an indicator denoting if the firm was privately owned. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

Dependent Variable	CAR(-1,1)	CAR(-2,2)	CAR(-1,1)	CAR(-2,2)
	(1)	(2)	(3)	(4)
Lag Direct Flight	0.026**	0.042**	0.032***	0.048***
	(0.010)	(0.020)	(0.005)	(0.016)
Q	0.001	0.006	0.001	0.006
	(0.002)	(0.005)	(0.002)	(0.005)
ROA	-0.118	-0.320***	-0.124	-0.311***
	(0.080)	(0.088)	(0.084)	(0.092)
Runup	-0.011	-0.021	-0.010	-0.021
	(0.017)	(0.023)	(0.018)	(0.024)
Cash	-0.001	-0.011	-0.002	-0.009
	(0.004)	(0.010)	(0.005)	(0.014)
Fraction of Target Acquired	0.016**	0.028**	0.015*	0.028**
	(0.007)	(0.010)	(0.007)	(0.011)
Ln (Value of Acquisition)	-0.002	-0.005*	-0.002	-0.004*
	(0.002)	(0.002)	(0.002)	(0.002)
Ln (Assets)	-0.002	0.002	-0.001	0.002
	(0.003)	(0.005)	(0.003)	(0.005)
Debt/Assets	0.017	0.003	0.014	0.005
	(0.030)	(0.039)	(0.030)	(0.040)
Non Horizontal	-0.019	-0.012	-0.009	-0.016
	(0.011)	(0.014)	(0.015)	(0.027)
Private Target	0.000	-0.005	-0.003	0.003
	(0.011)	(0.012)	(0.010)	(0.016)
Non Horizontal * Lag Direct Flight			-0.023*	0.007
			(0.013)	(0.033)
Private Target * Lag Direct Flight			0.006	-0.017
			(0.023)	(0.033)
Acquirer Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Destination Fixed Effect	Yes	Yes	Yes	Yes
R^2	0.320	0.392	0.328	0.394
N	175	175	175	175

Table 14: Q Regressions

Regressions results for Q. Q is the market value of equity plus the book value of long term debt (including the short term portion) divided by the book value of assets. Q is measured at the year end of the deal year and Q1, Q2, and Q3 denote the subsequent 3 years. For independent variables, all firm characteristics reflect the year-end prior to the announcement date; i.e., t-1. Lag Direct Flight is an indicator variable equal to one if a direct non-stop flight connects the MSA-city pair one year prior to the sample year. Debt is total liabilities. Assets are book value of assets. Non Horizontal is an indicator for all targets not in the acquirer's primary 4-digit SIC. Private is an indicator denoting if the firm was privately owned. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

	Q	Q1	Q2	Q3	Q	Q1	Q2	Q3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag Direct Flight	0.592	-0.016	-0.245	-0.426	-0.186	-0.412*	-0.202	-0.586
	(0.369)	(0.271)	(0.355)	(0.334)	(0.527)	(0.220)	(0.283)	(0.413)
Ln (Value of Acquisition)	-0.138***	-0.068	-0.089	-0.108**	-0.128**	-0.077	-0.093	-0.106***
	(0.036)	(0.055)	(0.059)	(0.036)	(0.043)	(0.055)	(0.059)	(0.033)
Ln (Assets)	-0.229	-0.106	-0.098	-0.152*	-0.218	-0.089	-0.096	-0.149*
	(0.137)	(0.067)	(0.065)	(0.073)	(0.137)	(0.07)	(0.066)	(0.070)
Debt/Assets	-1.422	-1.408	-1.323*	-0.398	-1.374	-1.459	-1.340*	-0.384
	(0.807)	(0.843)	(0.624)	(0.769)	(0.881)	(0.870)	(0.630)	(0.775)
Non-Horizontal	0.517	0.314	0.233	0.101	0.116	0.362	0.317	0.012
	(0.377)	(0.226)	(0.156)	(0.202)	(0.321)	(0.271)	(0.286)	(0.328)
Private Target	-0.018	0.248*	0.143	0.022	-0.146	0.025	0.107	0.002
	(0.281)	(0.137)	(0.142)	(0.175)	(0.281)	(0.182)	(0.173)	(0.312)
Non Horizontal * Lag Direct Flight					1.001***	0.006	-0.18	0.214
					(0.284)	(0.273)	(0.412)	(0.419)
Private Target * Lag Direct Flight					0.516	0.586**	0.056	0.098
					(0.603)	(0.252)	(0.264)	(0.405)
Acquirer Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
r2	0.523	0.539	0.44	0.431	0.535	0.546	0.441	0.432
N	185	184	176	175	185	184	176	175

APPENDIX TABLE

Table A1: Regressions on Cross-border M&As and Direct Flights at State-Province Levels

Regression results are reported for the non-stop direct flight and cross-border M&As in US state-Chinese province pair-years. Standard error of the coefficient clustered by the state-province pair is shown in parentheses. The marginal effect is reported in the Logit model regression. M&A Event is an indicator variable equal to one if at least one M&A deal occurs in the US state-Chinese province pair-year, zero otherwise. Number is the count of cross-border M&As in a US state-Chinese province pair-year. Value is the total transaction value in 2016 US dollars for a US state-Chinese province pair-year. Direct Flight is an indicator variable equal to one if a direct non-stop flight connects the state-province pair during the sample year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

Dependent Variable Model	M&A Event OLS (1)	M&A Event Logit (2)	Number OLS (3)	Number Poisson (4)	Ln(Value+1) OLS (5)	Value Poisson (6)
Lag Direct Flight	0.433***	0.219***	0.733***	1.583***	1.400***	3.003***
	(0.094)	(0.090)	(0.202)	(0.277)	(0.338)	(0.629)
Pair Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Province*Year Fixed Effect	Yes	No	Yes	Yes	Yes	Yes
State*Year Fixed Effect	Yes	No	Yes	Yes	Yes	Yes
R^2	0.492		0.552		0.382	
F test	22.98***	5.66***	14.22***		18.52***	
LRChi^2						
WaldChi^2				213.09***		120.07***
N	22,134	22,134	22,134	22,134	22,134	22,134