

Business Travel as an Input to International Trade*

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Abstract

The importance of business and social networks in generating trade is becoming increasingly recognized in the international economics literature. An important way in which people build and maintain networks is through face-to-face meetings. I propose an empirical model in which business travel helps to overcome informational asymmetries in international trade, generating international sales in the form of new export relationships. The empirical evidence, using a unique survey of all outbound travelers from the U.S. on international flights, which differentiates between business and leisure travel, supports the model. Lagged business travel with the United States has a positive impact on the extensive export margin from the U.S., increasing total U.S. exports. The effect is driven by travel with non-English speaking countries, for which communication with the U.S. by other means may be less effective. Similarly, the effect is stronger for differentiated products and among technical travelers, reflecting the information-intensive nature of differentiated products and that higher-skilled travelers may be better able to transfer information about profitable trading opportunities. Together, the evidence provides support for the many U.S. Department of Commerce export promotion programs designed to facilitate trade matchmaking.

Keywords: information transfer; business and social networks; trade costs; travel.

JEL Classification: F1.

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1 Introduction

Over the last half-century, tariffs and non-tariff barriers to international trade have fallen considerably around the world as countries join regional and multilateral trading agreements; yet substantial barriers still exist and many countries continue to trade a disproportionate amount intra-nationally. This world of significantly lower trade policy barriers and declining transport costs has shifted the focus of economic research towards more informal border barriers to trade. Based on evidence from a number of studies and a wide range of countries, Anderson and van Wincoop (2004) estimate national borders pose tariff-equivalent barriers of 44 percent. Although national borders are not easily erased, attempts to decrease the costs associated with borders may help enhance international trade opportunities and increase income levels.

Border barriers to trade may include language and cultural barriers (e.g., Frankel, Stein and Wei (1998)), currency barriers (e.g., Rose (2003)), security barriers (e.g., Anderson (2000)), and informational barriers (e.g., Portes and Rey (2005)). Business and social networks that cross national borders may lessen the impact of these informal trade barriers (Rauch 2001). In particular, networks may help to provide efficient matches between buyers and sellers, transfer information about the local culture, customs, and consumer markets, and provide informal contract enforcement through social sanctioning or blacklisting, when formal contracts are not easily enforced (Rauch 1999). Research has also concluded that networks are less effective at creating trade for homogeneous goods, for which prices can convey the relevant information about the profitability of trading the product, than for differentiated goods, for which a matching of buyers and sellers in characteristics space is necessary (Rauch and Trindade 2002).

In view of the existence of informational barriers to trade, it is not surprising that recent research has found that the use of communication tools and the costs of communication have robust associations with bilateral trade. This is the case for bilateral telephone traffic (Portes and Rey 2005) and the internet (Freund and Weinhold 2004). This work is also reinforced in a recent study by Fink, Mattoo and Neagu (2005) which finds communication costs, arguably a significant element of information costs, negatively impact trade, even after controlling for bilateral telephone traffic.

In this paper, I extend the literatures on informational barriers to trade, business and social networks, and communication in trade by studying the impact of bilateral international travel on bilateral international trade. An important way in which people build and maintain networks is

through face-to-face meetings. If networks are transnational, these meetings will require international travel. More precisely, this research presents evidence for international business travel as an input to international trade.

I am, of course, not the first to recognize the importance of international travel for international trade. Frankel (1997) writes:

Consider a kind of export important to the United States: high-tech capital goods. To begin sales in a foreign country may involve many trips by engineers, marketing people, higher ranking executives to clinch a deal, and technical support staff to help install the equipment or to service it when it malfunctions.

In fact, there is already some support in the literature for the relationship between international travel and international trade (e.g., Kulendran and Wilson (2000) for Australia¹, Shan and Wilson (2001) for China², Aradhyula and Tronstad (2003) for the Arizona-Mexico border region³, and Cristea (2011) for U.S. states).

This paper, however, offers a number of important contributions to the current literatures on international travel and international trade and communication in international trade, in large part due to the depth of a survey from the U.S. Department of Commerce on all outbound travelers from the United States. This is the first paper, to my knowledge, to use this rich international travel data in economics. I go beyond the previous work to estimate the effects of international travel on international trade using both time-series (Aradhyula and Tronstad (2003) rely only on cross-sectional information) and cross-sectional (Kulendran and Wilson (2000) and Shan and Wilson (2001) use only the time-series dimension) information to identify the relationship between international business travel and international trade. Also, unlike available data on telephone traffic and internet use, the international travel data identifies the traveler's main purpose of trip as business or leisure, allowing for a deeper exploration of the link between communication and international trade. This distinction ensures that any positive impact of business travel on international trade is

¹Kulendran and Wilson (2000) investigate the link between international trade and international travel flows between Australia and its four largest trading partners: the U.S., Japan, New Zealand, and the United Kingdom using time-series econometric techniques. With quarterly travel data from the Australian Bureau of Statistics separated by purpose of trip, the authors demonstrate that business travel Granger-causes total bilateral trade flows between the U.S. and Australia and business travel Granger-causes total imports from the United Kingdom. These results offer some evidence in support of the idea that businesspeople from the U.S. and the U.K. travel to Australia to find buyers for their goods or to meet with established contacts about continuing the relationship.

²Using a Granger no-causality test, Shan and Wilson (2001) conclude that there exists two-way causality between trade and travel, which they argue casts doubt on previous single-equation tourism demand forecasting studies.

³Using survey data, Aradhyula and Tronstad (2003) estimate an Arizona agribusiness firm's propensity to trade with Mexican border state, Sonora, as a function of whether the proprietor made a business trip to Sonora state. Controlling for the firm's size relative to other firms selling similar products, how long the firm has been in business in Arizona, the importance of geographic diversity for the agricultural product, and the Spanish-speaking skills of the proprietor, the authors find that business travel increased the propensity to trade by up to 51.5 percent.

not merely a reflection of an omitted variable, leisure travel. Similarly, unlike the U.S. Department of Transportation's *Passenger Origin Destination Survey* used in Cristea (2011) which considers only business-class versus economy-class travel, I rely on data reporting all travel for the purpose of business irrespective of class of service. I continue to analyze the differential impacts of business travel on export varieties versus export volumes per existing variety to distinguish the impact of business travel on starting new trading relationships (the extensive margin of trade) and expanding existing trading relationships (the intensive margin of trade).

Finally, if business travel is a necessary input to international trade, business travel may also be generated by trade. This idea is reinforced in the quote from Frankel (1997) that sales in a foreign country may involve the travel of "technical support staff to help install the equipment or to service it when it malfunctions", is consistent with the two-way causality found in Shan and Wilson (2001), and is also the key finding in Cristea (2011) that increases in exports increase the demand for business travel. In order to identify a *causal* impact of business travel on international trade, in which the key mechanism is that business travel improves buyer-seller relationships laying the foundation for international trade, the empirical model includes lagged values of bilateral travel to capture business network effects in addition to the contemporaneous quarter of travel to capture the trade-creates-travel impact. This distinction is another key contribution of this paper over the existing literature.

I propose an empirical model in which business travel serves as an input to international trade by overcoming informational and communication barriers to trade through face-to-face meetings. The model relates lagged and contemporaneous business travel to export volumes and varieties, meanwhile accounting for leisure travel and Anderson and van Wincoop (2003) multilateral resistance terms. Given recent trade models which emphasize the importance of the extensive margin of trade (e.g., Melitz (2003) and Chaney (2008)), I estimate country-level gravity model regressions using Poisson Quasi-Maximum Likelihood to account for zeros in international trade following Santos Silva and Tenreyro (2006) and data on international travel and international trade flows for the United States with the rest of the world. Specifically, the Office of Travel and Tourism Industries of the U.S. Department of Commerce conducts a quarterly survey of all outbound travelers from the U.S. on international flights called the *Survey of International Air Travelers* (SIAT). The SIAT includes information on each outbound traveler's country of residence, country of birth, country of citizenship, occupation, main destination, and main purpose of trip. This rich data set has, to my knowledge, never been explored in economics. The international trade data are from the U.S.

Census Bureau's *Exports and Imports of Merchandise Trade*. The two data sources are matched by country identifier for the first time in this paper.

The main results are consistent with the view that business travel for the purpose of communication and information transfer acts as an input to international trade. Evaluated at average values, a 10 percent increase in business travel leads to almost one new export relationship per country per quarter, but has no statistically significant impact on the volume of exports per existing variety. Business travel helps to overcome the informational barriers in creating new trading relationships, enhancing the extensive margin of exports, but as expanding existing trading relationships is less information-intensive, business travel plays no role in facilitating this trade.

The paper then explores the heterogeneous effects of increased business travel in a difference-in-difference approach along the lines of Cuñat and Melitz (2012). Specifically, the paper explores the effects of business travel by the main language of the trading partner, to investigate further the effects of language communication on business networks in international trade. I also use bilateral travel flows to explore more deeply the hypothesis that trade in differentiated products is more information-intensive than trade in homogeneous products and is therefore more strongly associated with face-to-face meetings. Finally, this paper utilizes traveler characteristics, including the traveler's occupation, to investigate the hypothesis that higher-skilled travelers are better able to convey information about profitable trading opportunities. As hypothesized, the main effect is strongest for travel with non-English speaking countries, for trade in differentiated products, and for travel by technical workers.

My results have direct implications for policy. By quantifying the extent to which international business travel causes international trade, this study can help to evaluate the many government programs worldwide that promote business travel for the purpose of creating trade. The U.S. government pursues many such export promotion policies with the objective of fostering the U.S. export market.⁴ These export promotion programs which rely heavily on international travel suggest a clear causal relationship must exist. Head and Ries (2010), however, document for Canada that after controlling for pre-mission levels of trade, Canadian trade missions have no impact on bilateral trade. This research can help to evaluate whether these trade missions, grants for trade shows, and other international trade promotion programs should be expanded or reduced.

The remainder of this paper is organized as follows. In the next section, I detail the international

⁴Please see Appendix A for a more detailed description of U.S. Department of Commerce export promotion programs.

travel data and the international trade data, and provide descriptive evidence in support of this new data. In Section 3, I outline the baseline gravity framework and present results from the analysis alongside. Section 4 distinguishes the effects of business travel on international trade by the main language of the trading partner, by product differentiation, and by the occupation of the traveler. The final section concludes with the broader impacts of this research and proposes some implications for economic policy.

2 Data

My main data source is a quarterly survey of all international outbound travelers from the United States. I match these key characteristics to country-level bilateral trade flows and other complementary country-level data sources to uncover the impact of business travel on international trade.

2.1 International travel data

The international travel data come from the U.S. Department of Commerce, International Trade Administration, Office of Travel and Tourism Industries (OTTI). The OTTI conducts a quarterly survey of international outbound air travel from the United States, as part of the nation's research on policy issues related to tourism. The *Survey of International Air Travelers* (SIAT) is an individual-level data set consisting of a representative sample of overseas travelers from the United States in every quarter from 1993 through 2003.⁵

The SIAT is the most comprehensive study of people traveling overseas from the United States, including both U.S. residents and residents of other countries. Although all information is collected on the outbound flight, U.S. residents answer questions about their upcoming trip abroad (travelers *from* the U.S.), and overseas-residents answer questions about their recent trip to the United States (travelers *to* the U.S.).

The SIAT data is particularly valuable to this research agenda as it offers variables beyond the available information in many other international travel databases. The main variables of interest are the respondent's main country of destination and the main purpose of trip. This paper will distinguish between *business* travel, as defined by business, professional, convention, conference, or trade show, and *leisure* travel, as defined by leisure, recreation, holiday, sightseeing, visiting friends,

⁵For details on individual airline involvement, the sampling, and survey weighting procedures of the SIAT, please see Appendix B.

or visiting relatives.⁶ The SIAT also has information on the respondent's country of residence, country of birth, country of citizenship, and occupation. Furthermore, directional data (travel to and from the United States) similar to international trade import and export statistics allows an additional dimension not available in other travel statistics.

The main advantage of the SIAT is the long history of quarterly bilateral travel flows by purpose of trip with which I can distinguish between business and leisure travel and by the traveler's country of residence and country of citizenship. Other travel statistics like those in the World Tourism Organization's *Compendium of Tourism Statistics* and *Yearbook of Tourism Statistics* provide data such as total bilateral travel flows (e.g., how many people traveled between the U.S. and Germany) or total flows of business and leisure travel to a country (e.g., how many people traveled on business or leisure to Germany from any other country). Similarly, the U.S. Department of Transportation's *Passenger Origin Destination Survey* used in Cristea (2011) considers only business-class versus economy-class travel, rather than all travel for the purpose of business irrespective of class of service. With the SIAT, I can identify total flows of business (or leisure) travel between the U.S. and Germany by U.S. residents and overseas residents.

I restrict observations as follows. In order to match the travel characteristics to country-level trade flows, I aggregate the individual-level travel flows within a quarter by main destination. Individual observations are weighted by the individual-level SIAT expansion weight. Finally, I exclude the main destinations of Canada and Mexico. While Canada and Mexico are indeed important U.S. trading partners, my goal in excluding these countries is to ensure that I capture virtually all international travel from the United States. A study like this would be difficult for a country like France where significant international travel may take place over land. The final data set includes a quarterly panel of business and leisure travel from 1993 to 2003 for 200 countries worldwide.

2.2 International trade data

Official U.S. export statistics are compiled by the U.S. Bureau of the Census from copies of the Shipper's Export Declarations which are required to be filed with local Customs officials at the time merchandise is exported from the country. The U.S. Census Bureau's *Exports and Imports of Merchandise Trade* are available monthly for the years 1993 through 2003, by commodity and

⁶The SIAT also includes travel for the purpose of government affairs or military, study or teaching, religion or pilgrimage, health treatment, and other purposes. These travel types are excluded from the analysis.

trading partner country.

The main variables of interest are the trading partner country code, the 10-digit Harmonized System (HS) commodity code, the 4-digit Standard International Trade Classification (SITC) code, and the value of exports.⁷ For the purpose of this research, I also define export varieties between the U.S. and country j to be the number of unique 10-digit HS export commodities that flow between the U.S. and country j and the volume of export flows per existing variety between the U.S. and country j to be the total value of exports divided by the number of export varieties in a given quarter.

I aggregate the monthly data into quarterly data by trading partner country for the purpose of matching to the SIAT data's main travel destination countries. The final data set includes a quarterly panel of U.S. export volumes and varieties from 1993 to 2003 for 216 countries by product differentiation.

2.3 Descriptive statistics

The international travel, international trade, and key gravity controls⁸ are matched by country code to generate a quarterly panel between 1993 and 2003.

As the SIAT is a relatively unknown data set, new to the study of economics, in this section I offer some descriptive statistics in support of this unique data source. Table 2.1 reports average values for travel flows between the United States and all other countries for the sample period. For the average quarter and country, there were 61,248 reported travelers with the United States. This includes a number of countries with zero travel flows in many quarters, as well as the United Kingdom which reported almost 3 million travelers (2,815,578) in the second quarter of 2000 alone. Not surprisingly, travel to and from the United States occurs more frequently with other English speaking countries, approximately 76,000 on average per country and quarter for English speaking countries compared to approximately 62,000 on average per country and quarter for non-English speaking countries. Across both English and non-English speaking countries, leisure travel represents the majority of international travel flows, though almost 40 percent of surveyed travelers report that their main purpose of travel is for business.

⁷“The f.a.s. (free alongside ship) value is the value of exports at the port of export, based on the transaction price including inland freight, insurance, and other charges incurred in placing the merchandise alongside the carrier at the U.S. port of exportation. The value as defined, excludes the cost of loading the merchandise aboard the exporting carrier and also excludes freight, insurance, and other charges or transportation costs beyond the port of exportation” (U.S. Bureau of the Census 2003).

⁸For more information on the key gravity controls used in the analysis, please see Appendix C.

Table 2.1: Descriptive Statistics: Travel Data, 1993-2003

	All Travelers	Non-English Speaking Countries	English Speaking Countries
All Travel	61,248	62,169	76,377
<i>Share of all travel</i>			
Business Travel	0.377	0.372	0.388
Leisure Travel	0.623	0.628	0.612
<i>Share of all travelers</i>			
Managerial & Executive	0.329	0.327	0.333
<i>of which: business</i>	0.540	0.534	0.532
<i>of which: leisure</i>	0.460	0.457	0.468
Technical & Sales	0.440	0.439	0.442
<i>of which: business</i>	0.357	0.354	0.363
<i>of which: leisure</i>	0.643	0.646	0.637
Other Travelers	0.231	0.234	0.225
<i>of which: business</i>	0.215	0.203	0.242
<i>of which: leisure</i>	0.785	0.797	0.758

Note: The table reports the average number of travelers across all countries and quarters, the share of business and leisure travel, and the share of travelers in different occupations, by the main language of the country.
Sources: SIAT, 1993-2003; Crystal (2003).

Roughly a third of all travelers report to be managerial or executive workers. An additional 44 percent of travelers report to be technical workers or in sales, and the remaining 23 percent are classified as other travelers, including government/military, and not working. Comparable to the average across all travelers, about 35 percent of travel by sales technicians is for the purpose of business. By contrast, managerial and executive workers travel for the purpose of business more often than the average traveler (at just over 50 percent), and other travelers travel for the purpose of business less often than the average traveler (at around 20 percent). These shares hold consistently across both English and non-English speaking countries.

Table 2.2 provides descriptive statistics for the trade data. On average, the United States exports roughly 900 unique HS-10 varieties per quarter per country, about 660 of which are differentiated products and 175 of which are homogeneous products. The total value per existing variety is greater for homogeneous goods (at \$368,076 per quarter per country) than for differentiated goods (at \$162,032 per quarter per country). In contrast to a long literature on common language as a determinant of trade, on average the United States trades slightly more with non-English speaking nations than with English speaking nations.

Figure 2.1 correlates average values of the logarithm of business travel with average values of

Table 2.2: Descriptive Statistics: Trade Data, 1993-2003

	All Countries	Non-English Speaking Countries	English Speaking Countries
Number of Export Varieties	899	989	904
<i>of which: homogeneous</i>	175	200	186
<i>of which: differentiated</i>	660	747	656
Export Value per Variety	246,635	286,516	185,911
<i>of which: homogeneous</i>	368,076	485,420	219,458
<i>of which: differentiated</i>	162,032	190,234	136,968

Note: The table reports the average number of U.S. export varieties and the average value of exports per variety across all trading partners and quarters, by the main language of the trading partner and product differentiation.
Sources: U.S. Census Bureau, 1993-2003; Crystal (2003).

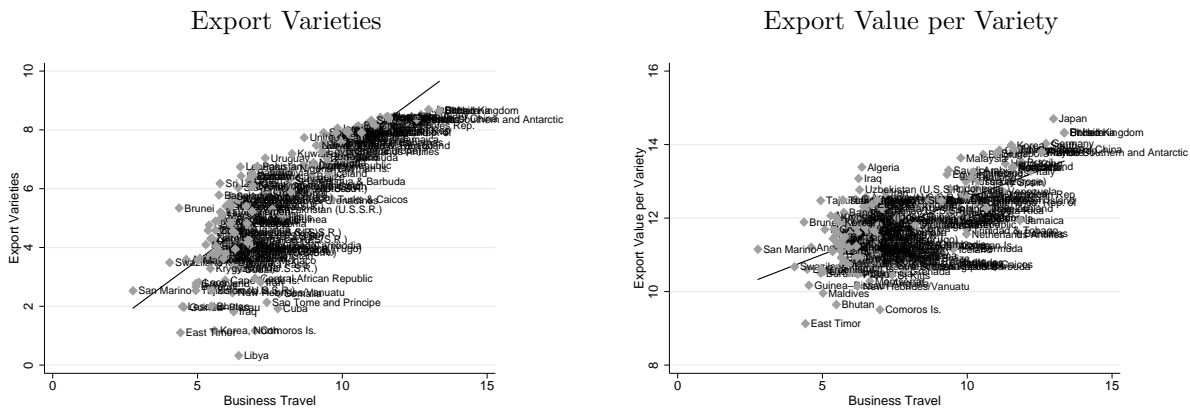


Figure 2.1: International Business Travel and Trade Flows, 1993-2003

Note: The figures correlate average values of the logarithm of business travel with average values of the logarithm of the number of export varieties and value per existing variety over the 44-quarter sample period for each country.
Sources: SIAT, 1993-2003; U.S. Census Bureau, 1993-2003.

the logarithm of the number of export varieties and value per existing variety over the 44-quarter sample period for each country, demonstrating a strong positive correlation on both accounts. The countries with which the United States trades a lot are also countries with which the United States travels a lot. If there are unobservable, country-specific factors driving both travel and trade with the United States, this would show up in both high levels of travel and trade. In Figure 2.2, I control for these country-specific characteristics and plot the 10-year change in the logarithm of business travel alongside the 10-year change in the logarithm of the number of export varieties as well as the value per export variety for each country. The simple correlations show that countries with strong growth in business travel over the 10-year period also have strong growth in the number of export varieties. A robust ordinary least squares regression reports a coefficient of 0.072 with a *t*-statistic of 3.16. Interestingly, there is no similar evidence for the value of exports per existing variety (the

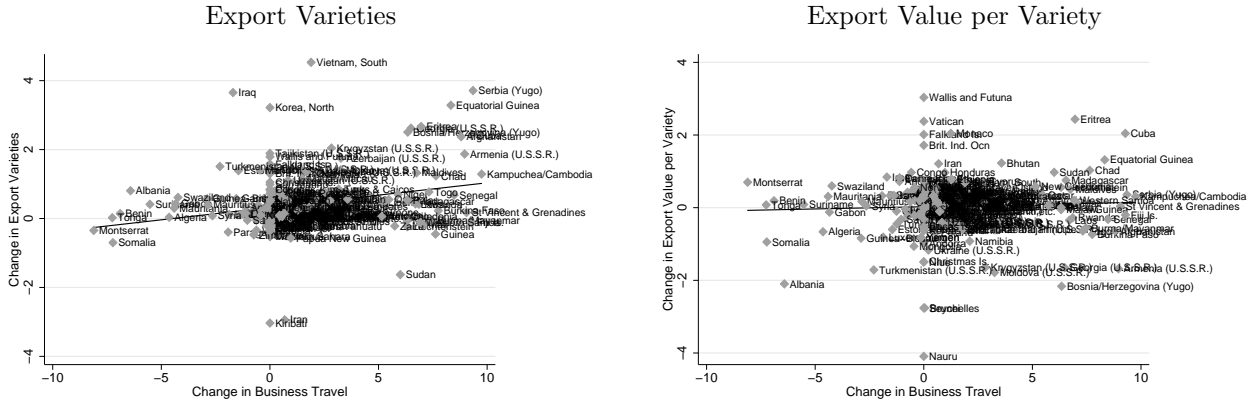


Figure 2.2: Log Changes in International Business Travel and Trade Flows, 1993-2003

Note: The figures correlate the 10-year change in the logarithm of business travel with the 10-year change in the logarithm of the number of export varieties and value per existing variety for each country.
 Sources: SIAT, 1993-2003; U.S. Census Bureau, 1993-2003.

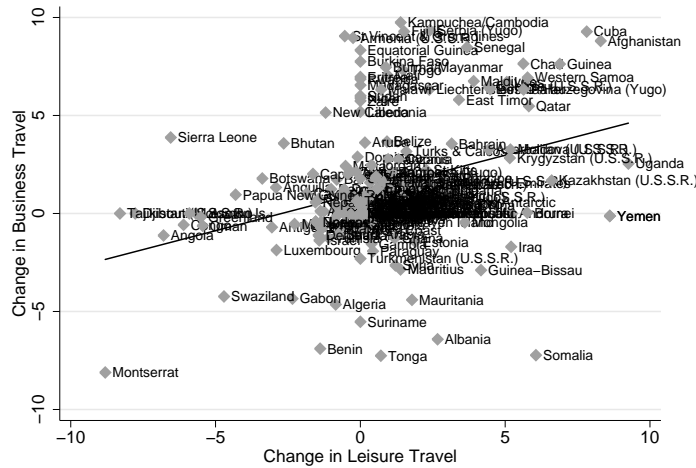


Figure 2.3: Log Changes in Business and Leisure Travel, 1993-2003

Note: The figure correlates the 10-year change in the logarithm of business travel with the 10-year change in the logarithm of leisure travel for each country.
 Source: SIAT, 1993-2003.

simple regression reports a coefficient of 0.012 with a *t*-statistic of 0.62), providing some support for the hypothesis that business travel helps to overcome the more informationally-intensive barriers to entry in new markets. Changes in business travel are highly correlated with changes in leisure travel across countries over time, as is evidenced by Figure 2.3. Therefore, similar relationships exist between the growth in leisure travel and the growth in trade over the 10-year period. For example, a robust OLS regression reports a coefficient of 0.076 with a *t*-statistic of 3.20 for the number of export varieties. For this reason, in the analysis that follows, I explicitly control for any

impact of leisure travel on trade.

3 Empirical Methodology and Estimation

The objective of this paper is to identify if bilateral business travel acts as an input to international trade. Augmented country-level gravity regressions relate business travel to international trade, accounting for the differential effects of leisure travel, Anderson and van Wincoop (2003) multilateral resistance terms, as well as zeros in international trade.

3.1 The baseline gravity model

Unlike formal tariff and non-tariff barriers and transportation costs, informal barriers to trade cannot be directly measured and must be inferred through bilateral trade flows. Economists have long relied on the gravity model of international trade to help predict trade flows between two countries. Following the literature, I model factors that influence the flow of trade between countries as multiplicative deviations from a proportional relationship between the bilateral value of trade and the product of the trading partners' attributes as follows:

$$V_{ijt} = \alpha_t \left(\frac{Y_{it} * Y_{jt}}{d_{ijt}} \right), \quad (3.1)$$

where i and j index countries and t indexes time. V_{ijt} represents exports from country i to country j in time t , α_t characterizes factors influencing exports that may vary over time but not across countries, and Y_{it} and Y_{jt} reflect the economic attributes of exporter i and importer j in time t . d_{ijt} represents the factors influencing trade between country i and j in time t . In this paper, I test the effects of business travel to and from the United States on trade with the United States. For this reason, country i will hereafter be referred to as US .

Conventional gravity models (and the baseline gravity framework used in this paper) include measures of economic size and per capita GDP to represent $Y_{US,t}$ and Y_{jt} . These capture the tendency for richer countries to be more open to trade and the tendency for larger (by population) countries to trade less. Typically, d_{USjt} includes variables such as distance, common language, colonial links, landlocked countries, currency unions, preferential trading arrangements, trade sanctions, and common borders.⁹ I also address the possibility that a strong bilateral aviation network may

⁹As Canada and Mexico are excluded from the analysis, no country has a common border with the United States. Nevertheless, such time-invariant effects will be captured in the augmented model by country fixed effects.

contribute to both international travel and international trade between the U.S. and country j .¹⁰

With these controls, I test the model on three different trade outcomes: total bilateral exports (EX_{USjt}), export varieties (EV_{USjt}), and export volumes (value) per variety ($\frac{EX}{EV}_{USjt}$). Consider the following decomposition of total exports from the United States to country j (EX_{USjt}):

$$EX_{USjt} = EV_{USjt} * \frac{EX_{USjt}}{EV_{USjt}}.$$

An increase in the total value of exports from the U.S. is the combination of an increase in the number of exported varieties (the extensive margin) and an increase in the value per existing traded variety (the intensive margin). I think of this distinction as starting a new trade relationship (varieties) versus expanding existing trade relationships (volume per variety). Relating business travel separately to these components of total exports will help to uncover the relative importance of business travel at overcoming informational barriers to trade along the extensive and intensive margin of trade. I hypothesize that business travel will be more effective at creating trade along the extensive margin. As varieties already exist in the local market, enhancing the intensive margin of trade is less information-sensitive than beginning new trade relationships not yet available in the local market.

This paper argues that international air travel can help to reduce the informational costs of trade through, for example, face-to-face meetings. Panel A of Table 3.1 reports results from classic country-level gravity regressions with robust standard errors clustered at the country level. The analysis includes total bilateral travel flows ($TRAV_{USjt}$) as an additional covariate, offering a simple test for the paper's main hypothesis. In addition, these preliminary tests also serve to assess the quality of the SIAT data (never before used in economics) and provide a benchmark comparison to previous work and to the analysis that will follow. Following Santos Silva and Tenreyro (2006), the model is estimated using Poisson Quasi-Maximum Likelihood (PQML) estimation to account for zeros in international trade. The results using PQML estimation, reported as incidence rate ratios, confirm the simple OLS correlations in Section 2.3, suggesting that bilateral travel positively predicts total bilateral exports. In addition, as hypothesized, the association of bilateral travel and bilateral trade is strongest along the extensive margin. Moreover, controlling for international

¹⁰An Open Skies Agreement allows air carriers of the U.S. and the foreign signatory to make decisions on routes, capacity, and pricing, and fully liberalizes conditions for charters and other aviation activities including unrestricted codesharing rights (U.S. Department of Transportation, Office of International Aviation 2008). Cristea, Hummels and Roberson (2012) note that liberalizing passenger aviation via Open Skies Agreements expanded route offerings and decreased prices, while Micco and Serebrisky (2006) demonstrate that bilateral participation in Open Skies Agreements reduces air transport costs and increases the share of imports arriving by air.

Table 3.1: Travel and International Trade

Dep. Variable:	Panel A		Panel B		Panel C	
	EX_{USjt}	$\frac{EX}{EV}_{USjt}$	EX_{USjt}	$\frac{EX}{EV}_{USjt}$	EX_{USjt}	$\frac{EX}{EV}_{USjt}$
$\log(TRA_{USjt})$	1.443*** (0.072)	1.170*** (0.025)	0.989 (0.014)			
$\log(BU_{USjt})$				1.222*** (0.054)	1.076*** (0.017)	1.019 (0.012)
$\log(\sum_{n=1}^4(BU_{USjt-n}))$						1.031 (0.022)
$\log(LEIS_{USjt})$				1.169*** (0.038)	1.101*** (0.013)	1.467*** (0.103)
$\log(\sum_{n=1}^4(LEIS_{USjt-n}))$						1.033** (0.015)
Gravity Controls	YES	YES	YES	YES	YES	YES
N	8,300	8,300	8,300	8,300	8,300	7,556
						1.027*** (0.010)
						1.143*** (0.046)
						1.039*** (0.011)
						1.089*** (0.018)
						1.030*** (0.042)
						0.953
						0.987
						1.018
						7,556
						7,556
						7,556

Note: The table reports incidence rate ratios from a Poisson Quasi-Maximum Likelihood estimation where the dependent variable is the count of exports in column (1), export varieties in column (2), and export value per variety in column (3) of each panel. Robust standard errors, clustered at the country-level, are in parentheses. *** denotes significance at the 1 percent level; ** denotes significance at the 5 percent level; * denotes significance at the 10 percent level. Other gravity controls, not reported, are described in the text.

Sources: SIAT, 1993-2003; U.S. Census Bureau, 1993-2003.

travel in this way helps to reduce the costs associated with other factors influencing trade relations, such as distance, language, and formal trade arrangements, demonstrating the importance of travel outside conventional gravity factors.¹¹

The results in Panel A reinforce the evidence in Portes and Rey (2005) and Freund and Weinhold (2004) that communication tools like the telephone and the internet, respectively, have strong associations with international trade. Unlike data on telephone traffic and internet hosts, the international travel data identifies the traveler's purpose of travel as business or leisure, allowing for a deeper exploration of the link between communication and international trade. I extend this simple analysis in Panel B of Table 3.1 to decompose total bilateral travel flows into bilateral business travel and bilateral leisure travel. It has been shown that business networks help to reduce informational costs of trade (Rauch 2001). An important way in which people build and maintain networks is through face-to-face meetings requiring international business travel. Moreover, research has found that leisure travel may also help to increase trade relations using time-series econometric techniques, for example when tourists locate business opportunities while on holiday or learn about new foreign products increasing the local demand for foreign goods upon returning home (Kulendran and Wilson 2000). The results in Panel B confirm the correlations found in the previous section and are consistent with existing findings in the literature; both business travel and leisure travel have strong positive associations with U.S. exports. The evidence also points to a relatively stronger correlation between travel and the number of export varieties as compared to the volume of exports per variety.

The basic intuition behind the empirical model is that business travel helps to overcome informational asymmetries acting as an informational input to international trade. This suggests that face-to-face meetings may occur prior to and not contemporaneous with international trade—that is, if business travel serves as an input to setting up trade relationships via a network effect, businesspeople may fly to destinations to set up trade months (or even years) before trade takes place.

¹¹The unreported gravity control coefficients are available by request from the author. Estimated coefficients enter with the expected signs and magnitudes. Interestingly, comparing the results for export varieties and export volumes per existing variety, the data suggest that measures thought to proxy for transportation costs (i.e., distance, landlocked nations) may proxy for informational costs or sunk start-up costs as suggested in Grossman (1998) and confirmed in a recent meta-analysis by Disdier and Head (2008). More specifically, both distance and being a landlocked nation serve as strong deterrents of market access for export varieties (that is, large deterrents to starting trade relationships), but once a variety is exported neither distance nor a country's landlocked status predicts the value of trading relationships. Similarly, colonial linkages increase the number of export varieties, but have no statistical effect on the volume of exports given existing varieties traded, consistent with Head, Mayer and Ries (2010). This evidence reinforces the idea that as policy barriers and transportation costs are falling, research to understand and quantify informational barriers to international trade with the purpose of decreasing the costs associated with these barriers can help to enhance international trade opportunities and increase income levels.

At the same time, trade may generate business travel. This idea is reinforced in the quote from Frankel (1997) that sales in a foreign country may involve the travel of “technical support staff to help install the equipment or to service it when it malfunctions”, is consistent with the findings of two-way causality in Shan and Wilson (2001), and is also the key finding in Cristea (2011) that increases in exports increase the demand for business travel. In order to identify a *causal* impact of business travel on international trade, in which the key mechanism is that business travel improves buyer-seller relationships laying the foundation for international trade, in Panel C of Table 3.1, I include lags of the main variables of interest in order to consider the hypothesis that it takes time for business travel to translate into trade opportunities. The empirical model includes the cumulative 4-quarter lag of bilateral business travel and the cumulative 4-quarter lag of leisure travel to capture these network effects in addition to the contemporaneous quarter of travel to capture the trade-creates-travel impact. Controlling for bilateral leisure travel, the data confirm that network-creating business travel (as proxied by the cumulative 4-quarter lag) is a stronger predictor of U.S. exports than the contemporaneous trade-creates-travel effect (statistically insignificant and smaller in magnitude). Once again, lagged business travel maintains a stronger association with the extensive margin of trade. For new export varieties, the coefficient on lagged business travel is larger than for contemporaneous business travel offering suggestive evidence of the business network mechanism. In fact, the *F-statistic* testing the statistical difference between the contemporaneous business travel variable and the cumulative 4-quarter lag of business travel is 16.20 (with a *p-value* of 0.0001); at average values for business travel and export varieties between the U.S. and country j (see Section 2.3), a 10 percent increase in the cumulative lag of business travel (approximately 2,000 trips for a country-quarter) is associated with approximately 4 more new varieties than a similar increase in the contemporaneous quarter of business travel.

3.2 The augmented gravity model

The analysis in Table 3.1 provides simple correlations for the relationship between business travel and international trade, helps to assess the quality of the SIAT data never before used in economics, and provides a benchmark comparison for the analysis. The cumulative 4-quarter lag of business travel, controlling for leisure travel, has strong positive predictive power for total U.S. exports. The results are strongest for information-intensive new export varieties. Together, these results hint that business travel improves and develops key relationships along the lines of the business network literature.

However, the reduced form analysis in Section 3.1 ignores prices and price indices. As these may be correlated with trade costs, Anderson and van Wincoop (2003) update the basic gravity model to a general equilibrium framework, to account for these country-level price differentials. This transforms equation (3.1) into:

$$V_{USjt} = \alpha_t \left(\frac{Y_{US,t}^* * Y_{jt}^*}{d_{USjt}} \right), \quad (3.2)$$

where $Y_{US,t}^*$ and Y_{jt}^* index the complete economic situation in the U.S. and country j at time t . An important contribution of Anderson and van Wincoop (2003) is that $Y_{US,t}^*$ and Y_{jt}^* include country-level price indices or “multilateral resistance terms,” which depend on a country’s complete set of bilateral trade costs. The authors, in Anderson and van Wincoop (2003) and Anderson and Yotov (2012), recommend augmenting the traditional gravity model with exporter and importer fixed effects. I follow this convention in the main empirical model that follows:

$$\begin{aligned} V_{USjt} = & \exp(\gamma_1 \log(BUS_{USjt}) + \gamma_2 \log(\sum_{n=1}^4 (BUS_{USjt-n})) \\ & + \gamma_3 \log(LEIS_{USjt}) + \gamma_4 \log(\sum_{n=1}^4 (LEIS_{USjt-n})) \\ & + \gamma_5 \log(GDP_{jt}) + \gamma_6 \log(PCGDP_{jt}) + \gamma_7 d_{USjt} \\ & + \delta_t + \phi_j + \epsilon_{USjt}). \end{aligned} \quad (3.3)$$

As there is no country-level variation within the U.S., the U.S. (exporter) fixed effect, along with α_t and $Y_{US,t}^*$ can be estimated using time fixed effects (δ_t). The quarterly fixed effects control for any unobservable and country-invariant characteristic that may affect trade with the United States. I also include country-level fixed effects (ϕ_j) to account for the country-specific nature of the Anderson and van Wincoop (2003) multilateral resistance terms. The ϕ_j also controls for all country-specific, unobservable, and time-invariant factors driving both travel and trade, as demonstrated in Section 2.3. As previously discussed, Y_{jt}^* will be captured by GDP (GDP_{jt}) and GDP per capita ($PCGDP_{jt}$). The vector d_{USjt} , designed to capture other factors which influence trade between the U.S. and country j in time t , includes dummies reflecting the official use of the dollar (DOL_{USjt}), a preferential trading agreement with the U.S. (PTA_{USjt}), trade sanctions imposed by the U.S. (SAN_{USjt}), and a preferential aviation agreement with the U.S. (PAA_{USjt}).¹²

¹²Variables that do not change over time (such as distance) or do not change across countries (such as U.S. per capita GDP) are omitted. As mentioned in footnote 9, these time-invariant and country-invariant effects will be captured by the country and time fixed effects.

Table 3.2: Business Travel and International Trade

Dep. Variable:	EX_{USjt}	EV_{USjt}	$\frac{EX}{EV}_{USjt}$
$\log(BUS_{USjt})$	1.007* (0.004)	1.001 (0.001)	1.019 (0.015)
$\log(\sum_{n=1}^4(BUS_{USjt-n}))$	1.046*** (0.015)	1.006* (0.003)	0.950 (0.031)
$\log(LEIS_{USjt})$	0.992** (0.004)	1.000 (0.001)	0.979* (0.012)
$\log(\sum_{n=1}^4(LEIS_{USjt-n}))$	0.989 (0.010)	0.999 (0.003)	1.066 (0.056)
Gravity Controls	YES	YES	YES
Quarter FE	YES	YES	YES
Country FE	YES	YES	YES
N	7,596	7,596	7,596

Note: The table reports incidence rate ratios from a Poisson Quasi-Maximum Likelihood estimation of equation (3.3) in the paper where the dependent variable is the count of exports in column (1), export varieties in column (2), and export value per variety in column (3). Robust standard errors, clustered at the country-level, are in parentheses. *** denotes significance at the 1 percent level; ** denotes significance at the 5 percent level; * denotes significance at the 10 percent level. Other gravity controls, not reported, are described in the text.

Sources: SIAT, 1993-2003; U.S. Census Bureau, 1993-2003.

ϵ_{USjt} represents an error term that is assumed to be well-behaved; that is, it is assumed to exhibit no serial correlation and to be orthogonal to all regressors.

Finally, the specification includes the main variables of interest reflecting the “trade-creates-business travel” contemporaneous effect (BUS_{USjt}) and the cumulative 4-quarter lagged business travel “network” effect ($\sum_{n=1}^4(BUS_{USjt-n})$). As shown in Section 2.3, changes in business travel and changes in leisure travel within a country over time are highly correlated. Therefore, in all analyses, I also include the equivalent contemporaneous and lag controls for leisure travel. The main parameters of interest are γ_1 and γ_2 , the coefficients on the contemporaneous and lagged business travel variables. The specification in equation (3.3) implies that identification in this model is based on changes over time in business travel between the U.S. and a given country j . As in the previous section, the model is estimated using PQML to account for zeros in international trade as suggested by Santos Silva and Tenreyro (2006) and tested on three different international trade outcomes: total exports, export varieties, and export volumes per variety to distinguish the role of business travel in starting new trade relationships and maintaining existing trade relationships.

However strong the correlation between business travel and bilateral trade, one must be careful not to draw causal inference from the results without further investigation. The classic econometric interpretations of the main coefficients of interest is that, *ceteris parabis*, business travel impacts export sales. For this to hold, it must be the case that any other determinants of export sales

correlated with travel have been removed by the set of controls. Given these controls, the error term is assumed to be exogenous to the main variable of interest, business travel. But, it is clear that any unobserved heterogeneity or reverse causality will violate this key assumption. That is, the main concern in estimating the key coefficients is the presence of unobservable shocks to bilateral trade that are also correlated with bilateral travel. It is arguable that any problems which might arise due to unobserved heterogeneity are accounted for in this analysis through the use of leisure travel as an appropriate counterfactual, through the use of country-level fixed effects, and through the use of lagged variables of interest.

Incidence rate ratios from the PQML estimation of the theoretically-founded gravity model are reported in Table 3.2. Controlling for leisure travel and Anderson and van Wincoop (2003) multilateral resistance terms, not surprisingly the estimated magnitudes are far smaller than the estimated effects from Panel C of Table 3.1, but the interpretation of the effects remains the same. Notably, increases in network-creating business travel with the U.S. increase the number of export varieties from the United States, enhancing total U.S. exports.¹³ Evaluated at average values, a 10 percent increase in business travel leads to almost one new export relationship per country per quarter (a 0.025 percent increase), but has no statistically significant impact on the volume of exports per existing variety.¹⁴ Business travel helps to overcome the informational barriers in creating new trading relationships, enhancing the extensive margin of exports, but as expanding existing trading relationships is less information-intensive, business travel plays no role in facilitating this trade.

4 Business Networks & Information Transfer

In the previous section, I presented evidence consistent with the importance of business and social networks in international trade. In this section, I further explore the idea that business travel acts as a conduit for face-to-face communication to seal international export transactions in a difference-in-difference approach along the lines of Cuñat and Melitz (2012). Business travel for the purpose of face-to-face meetings is even more important for travelers from non-English speaking countries where communication by telephone or the internet may be less effective. Similarly, the complex

¹³It is also notable that, once controlling for country-specific factors related to travel and trade, leisure travel has little statistical impact on international trade relations.

¹⁴The relatively small quantitative magnitude should not come as a surprise. Most business travel is not for the purpose of creating trade. As an academic economist, I often list my travel to international conferences as business travel, yet this travel does not have any impact on bilateral trade relations.

Table 4.1: Business Travel and International Trade, by Trading Partner Language

Dep. Variable:	EX_{USjt}	EV_{USjt}	$\frac{EX}{EV}_{USjt}$
$ENGLISH * \log(BUS_{USjt})$	1.002 (0.011)	0.996** (0.002)	0.984 (0.025)
$\log(BUS_{USjt})$	1.007 (0.004)	1.002** (0.001)	1.021 (0.017)
$ENGLISH * \log(\sum_{n=1}^4(BUS_{USjt-n}))$	0.980 (0.025)	0.985*** (0.005)	1.094** (0.042)
$\log(\sum_{n=1}^4(BUS_{USjt-n}))$	1.050*** (0.017)	1.011** (0.005)	0.937* (0.032)
$ENGLISH * \log(LEIS_{USjt})$	0.997 (0.010)	1.002 (0.002)	1.009 (0.024)
$\log(LEIS_{USjt})$	0.992* (0.004)	1.000 (0.002)	0.978 (0.015)
$ENGLISH * \log(\sum_{n=1}^4(LEIS_{USjt-n}))$	0.994 (0.026)	1.005 (0.005)	0.923 (0.058)
$\log(\sum_{n=1}^4(LEIS_{USjt-n}))$	0.989 (0.010)	0.997 (0.003)	1.078 (0.065)
Gravity Controls	YES	YES	YES
Quarter FE	YES	YES	YES
Country FE	YES	YES	YES
N	7,596	7,596	7,596

Note: The table reports incidence rate ratios from the Poisson Quasi-Maximum Likelihood estimation of a variation on equation (3.3) in the paper where the dependent variable is the count of exports in column (1), export varieties in column (2), and export value per variety in column (3), including key interactions with the trading partner's main language. Robust standard errors, clustered at the country-level, are in parentheses. *** denotes significance at the 1 percent level; ** denotes significance at the 5 percent level; * denotes significance at the 10 percent level. Other gravity controls, not reported, are described in the text. Sources: SIAT, 1993-2003; U.S. Census Bureau, 1993-2003; Crystal (2003).

nature of differentiated goods requires a larger role for face-to-face meetings to transfer information, whereas such meetings are less important for homogenous products for which prices can convey the relevant information about the profitability of the trade. Finally, it is expected that higher-skilled (technical and sales) business travelers may be more effective at understanding the complexities of trading relationships and thus creating new trade opportunities, as international dealings require a certain level of knowledge.

4.1 Main language of trading partner

Table 4.1 reports results for country-level gravity regressions as in the previous section where the main variables of interest are now interacted with the main language of the trading partner country. Countries are designated English speaking or non-English speaking by the official language spoken in the country as detailed in Crystal (2003). The interaction effect reports the differential impact of business travel on international trade for English speaking versus non-English speaking countries,

Table 4.2: Business Travel and International Trade, by Product Differentiation

Dep. Variable:	Homogeneous Goods			Differentiated Goods		
	EX_{USjt}	EV_{USjt}	$\frac{EX}{EV}_{USjt}$	EX_{USjt}	EV_{USjt}	$\frac{EX}{EV}_{USjt}$
$\log(BUS_{USjt})$	1.009*	1.000	1.018	1.000	1.001	1.001
	(0.005)	(0.001)	(0.014)	(0.004)	(0.001)	(0.005)
$\log(\Sigma_{n=1}^4(BUS_{USjt-n}))$	1.015	1.004	0.990	1.055***	1.007*	0.998
	(0.013)	(0.004)	(0.021)	(0.019)	(0.004)	(0.007)
$\log(LEIS_{USjt})$	0.991	1.001	0.983	0.995	1.000	1.001
	(0.006)	(0.001)	(0.013)	(0.004)	(0.001)	(0.005)
$\log(\Sigma_{n=1}^4(LEIS_{USjt-n}))$	0.999	1.001	1.045	0.977*	0.999	0.986*
	(0.012)	(0.003)	(0.035)	(0.012)	(0.003)	(0.007)
Quarter FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
N	7,359	7,359	7,359	7,499	7,499	7,499

Note: The table reports incidence rate ratios from the Poisson Quasi-Maximum Likelihood estimation of equation (3.3) in the paper where the dependent variable is the count of exports in column (1), export varieties in column (2), and export value per variety in column (3), separately for homogeneous and differentiated products. Robust standard errors, clustered at the country-level, are in parentheses. *** denotes significance at the 1 percent level; ** denotes significance at the 5 percent level; * denotes significance at the 10 percent level. Other gravity controls, not reported, are described in the text.

Sources: SIAT, 1993-2003; U.S. Census Bureau, 1993-2003; Rauch (1999).

while the main effect reports the impact of non-English speaking travel on trade.

The data suggest that the effect of network-creating business travel on export varieties and total U.S. exports found in Table 3.2 is driven by business travel with non-English speaking countries, as is evidenced by the incidence rate ratios less than one for the English language interaction terms. At average values, a 10 percent increase in business travel with non-English speaking countries increases the extensive margin of trade by 0.05 percent, while the same increase in business travel with English speaking countries differentially decreases the likelihood of changes in export varieties and volumes. This evidence is suggestive of the hypothesis that business travel to overcome informational barriers is less important for travelers from English-speaking countries.

4.2 Product differentiation

Research has shown that business networks are more effective at creating trade for differentiated products than for homogenous goods due to the information-intensive nature of differentiated products (Rauch 1999). If business travel acts as an input to international trade opportunities by helping to overcome the larger informational barriers associated with differentiated products, we should expect to see a larger effect of business travel on trade in differentiated products. Table 4.2 reports results from the estimation of country-level gravity regressions as specified in equation (3.3) for all

countries, by product differentiation. I match the Rauch (1999) conservative classification of goods to the international trade flows by 4-digit SITC code to test the hypothesis that business travel is more effective at creating trade for differentiated products than for homogeneous goods. I define homogeneous goods to be those goods traded on an organized exchange and those goods with a reference price.

To conclude that business travel helps to create trade opportunities by reducing informational costs, the effect of business travel should be larger for the information-intensive differentiated products. In fact, neither contemporaneous nor lagged business travel has any statistical impact on trade in homogeneous products in a theoretically-founded gravity model. The effect of network-creating business travel found for all goods in Table 3.2 is strongly driven by changes in the number of differentiated products exported. A 10 percent increase in business travel increases the number of new differentiated varieties exported by the United States by 0.03 percent, or close to one new variety per country per quarter.

These results confirm prior research on the impact of business and social network in international trade (e.g., Rauch (1999), Rauch (2001), and Rauch and Trindade (2002)). In addition, the data stress the relative importance of communication and information transfer for differentiated products over homogeneous products, consistent with Berthelon and Freund (2008) which shows that trade in differentiated products has become less “distance-sensitive” over time relative to trade in homogeneous products. The authors argue that the result is likely due to improvements in communication technologies which are more important for differentiated goods, once again reflecting the relative importance of communication for differentiated goods. Furthermore, while business travel may help to create new trade relationships for differentiated products by helping to overcome the contracting and informational costs associated with trade, once varieties are traded business travel has no statistical effect on expanding the trade relationship.¹⁵

4.3 Traveler occupation

Prospective buyers traveling to the United States to learn about product quality and trade opportunities must understand the complexities of international trade relations and have the ability to identify profitable opportunities. Similarly, sales technicians from the United States who travel

¹⁵Overall, the results partially confirm the model presented in Chaney (2008) in which the impact of trade barriers are dampened by the elasticity of substitution between goods. If business travel helps to overcome informal barriers to trade, the same reduction in trade barriers has a stronger extensive margin effect in differentiated products than in homogeneous products, where even low productivity entrants can capture a relatively large share of the market.

Table 4.3: Business Travel and International Trade, by Traveler Occupation

Dep. Variable:	Managerial & Executive Workers			Technical & Sales Workers			Other Workers		
	EX_{USjt}	EV_{USjt}	$\frac{EX}{EV}_{USjt}$	EX_{USjt}	EV_{USjt}	$\frac{EX}{EV}_{USjt}$	EX_{USjt}	EV_{USjt}	$\frac{EX}{EV}_{USjt}$
$\log(BU_{USjt})$	1.002 (0.003)	1.001* (0.001)	1.022 (0.026)	1.009** (0.004)	1.000 (0.001)	0.992 (0.011)	1.003 (0.002)	1.000 (0.001)	1.005 (0.005)
$\log(\Sigma_{n=1}^4(BU_{USjt-n}))$	1.023** (0.010)	1.002 (0.002)	0.998 (0.019)	1.036*** (0.010)	1.005** (0.002)	0.948 (0.047)	1.003 (0.004)	1.002 (0.001)	0.956* (0.026)
$\log(LEIS_{USjt})$	0.999 (0.003)	1.000 (0.001)	0.992 (0.007)	0.991** (0.004)	1.000 (0.001)	0.993* (0.004)	0.999 (0.003)	1.000 (0.001)	0.973 (0.020)
$\log(\Sigma_{n=1}^4(LEIS_{USjt-n}))$	0.987* (0.007)	1.002 (0.002)	0.980** (0.010)	0.993 (0.008)	1.001 (0.002)	1.025 (0.020)	1.011 (0.010)	0.999 (0.002)	1.055 (0.041)
Gravity Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	7,252	7,252	7,252	7,372	7,372	7,372	7,224	7,224	7,224

Note: The table reports incidence rate ratios from the Poisson Quasi-Maximum Likelihood estimation of equation (3.3) in the paper where the dependent variable is the count of exports in column (1), export varieties in column (2), and export value per variety in column (3), by the traveler's reported occupation. Robust standard errors, clustered at the country-level, are in parentheses. *** denotes significance at the 1 percent level; ** denotes significance at the 5 percent level; * denotes significance at the 10 percent level. Other gravity controls, not reported, are described in the text.
Sources: SIAT, 1993-2003; U.S. Census Bureau, 1993-2003.

abroad to find prospective buyers for their products must be knowledgeable about the product and the market for a successful sale. Therefore, if business travel for the purpose of face-to-face meetings helps to overcome informational barriers to trade, we may expect that higher-skilled individuals who are better suited to convey and absorb information are better able to recognize trading opportunities and create bilateral trade relationships. Table 4.3 discerns the main results from Table 3.2 by the occupation of the traveler as reported in SIAT. This paper distinguishes between managerial and executive workers, technical and sales workers, and all other travelers (including those not working or working for the government/military).

The evidence is consistent with the hypothesis that more knowledgeable travelers are better able to transfer information about profitable trading opportunities. Interestingly, yet perhaps not surprisingly, though contemporaneous travel by top ranking managers and executives has a small, positive impact on the number of new export varieties, the strongest impact of network-creating business travel occurs by technical and sales workers, suggestive of the ideas in Frankel (1997). That is, managers and executives may seal a trade deal, after many trips by technical sales employees to establish the new trade opportunities.

5 Conclusion

The qualitative nature and quantitative importance of informal barriers to international trade remains an important question in international economics. Travel helps to overcome these barriers both by building and maintaining transnational information-sharing networks and through direct sales and service effort. This study examines the causal relationship between travel and trade, the relative effectiveness of different kinds of travel and different characteristics of travelers in promoting trade, and the relative importance of travel for trade in different types of goods. All of these results will help policymakers and academics alike to gain a better understanding of how informal barriers to trade work and how large they are.

The main results are consistent with the view that business travel for the purpose of communication serves as an input to international export sales for U.S. producers. The effect is driven by travel from non-English speaking countries, for which communication with the U.S. by other means may be less effective. Moreover, the effect is stronger for differentiated products and for higher-skilled travelers, reflecting the information-intensive nature of differentiated products and that higher-skilled travelers are better able to transfer information about trading opportunities.

My results have direct implications for policy. By quantifying the extent to which international business travel causes international trade, this study can help to evaluate the many government programs worldwide that promote business travel for the purpose of creating trade. The evidence provides support for the many U.S. Department of Commerce export promotion programs, like the International Buyer Program, designed to bring prospective importers to the U.S. to facilitate trade matchmaking.

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A Export Promotion Programs

The U.S. Department of Commerce, International Trade Administration sponsors many trade events designed to provide venues for U.S. exporters to meet international buyers, distributors, or representatives. By organizing trade missions and educational seminars, providing matching or export counseling services at trade shows, and recruiting buyer delegations to U.S. trade shows, the U.S. Government helps U.S. exporters expand global sales at trade events.

The U.S. Department of Commerce sponsors trade missions with the objective of fostering the U.S. export market. Trade missions are defined as “missions involving travel to foreign countries by private sector participants and Commerce Department employees in which the Commerce Department recruits and selects participants from the business community.” In 2003, the United States organized 27 trade missions overseas reaching 32 countries, and 2 “inward” trade missions in which prospective importers traveled to the United States from abroad. A typical trade mission is attended by 10 to 15 delegates. Government regulations require that all costs incurred by the Department on behalf of the trade mission participants be recovered in full from the participants. As these fees are often expensive for small and medium-sized businesses wishing to enter a new market, many small grants are available to firms to cover these costs through the government’s Small Business Administration Grant Resources.

The International Buyer Program (IBP) recruits over 125,000 prospective foreign buyers each year to participate in U.S. trade shows, where U.S. exporters showcase products. As part of the IBP, trade shows are promoted around the world and U.S. Commercial Service Trade Specialists recruit and lead buyer delegations to the 32 IBP trade shows each year. IBP trade shows also offer hands-on export counseling, marketing analysis, and matchmaking services by country and industry experts from the U.S. Commercial Service.

Other export promotion strategies by the U.S. government include the U.S. Trade and Development Agency (USTDA) which directly funds approximately 45 “orientation visits” each year with the purpose of bringing foreign buyers to the United States to become familiar with products for future purchases. U.S. suppliers participating in the visits showcase their products, expertise, and make valuable international contacts. The Special American Business Internship Training Program (SABIT) facilitates firms’ foreign market access by funding grants to host foreign managers and scientists for temporary professional training in the United States. The program argues “while many international markets are full of opportunity, there are an equal number of risks that must

be managed for this potential to be realized. SABIT manages innovative training programs that reduce market access barriers and minimize commercial risks for organizations interested in market opportunities.”

B Survey of International Air Travelers

The survey program was initiated in the early 1980s by the U.S. Travel and Tourism Administration (USTTA) in response to a growing need for information on the volume, characteristics, and travel patterns of international travelers to and from the United States.¹⁶ Airline involvement is on a voluntary basis among airlines invited to participate. Factors influencing the selection of an airline for an invitation to participate in the survey include the airline’s market share in the geographic area under consideration, the desirability to have both a U.S. and foreign flag carrier for each area, and the necessity to keep costs at a minimum. Participating airlines are selected at random from the list of major airlines which voluntarily choose to participate in the program. Flight packages containing approximately 100 questionnaires are distributed onboard U.S. outbound flights to international destinations in twelve languages.

The survey results are weighted to represent the population of travelers to and from the United States based on the Immigration and Naturalization Service (INS) I-92 Form for U.S. residents and the Department of Homeland Security (DHS) I-94 Form for overseas residents. The I-92 Form must be completed for all arriving and departing flights from the United States with the complete number of passengers aboard by citizenship. Each U.S. resident respondent is given a weight based on citizenship information and departure and arrival city pairs. The I-94 Form is required for most non-U.S. resident travelers arriving in the United States. This provides a count of the population of overseas residents by citizenship at specific ports of entry (customs information) with which to weight individual respondents.

C Traditional Gravity Controls

Economists have long relied on the gravity model of international trade to help predict trade flows between two countries. For the gravity model estimations, I collect quarterly data on country j ’s gross domestic product (GDP) and per capita GDP from the International Monetary Fund’s

¹⁶In April 1996, the USTTA was closed due to a lack of funding and the responsibility of the survey was transferred to the OTTI.

International Financial Statistics. GDP is measured in current U.S. dollar units. I use the great circle distance from Chicago to country j 's major city. To measure the ease of communication in international transactions, I include an indicator for countries with English as the official language from Crystal (2003), a linguist and expert on the English language worldwide. Information on other former British colonies is available from www.britishempire.co.uk, a list of landlocked countries was retrieved from the CIA World Factbook, and countries using the dollar as official currency are available from two main sources: the U.S. Department of Treasury's, Office of International Affairs, and Glick and Rose (2002). Preferential trading arrangements between country j and the United States are flagged with information from the Organization of American States, Foreign Trade System, while economic and trade sanctions by the United States on country j are flagged with information from the U.S. Department of Treasury's, Office of Foreign Assets Control and supplemented with historical information from Malloy (2001). I also define an indicator variable for preferential aviation agreements if the U.S. maintained an Open Skies Agreement or other bilateral aviation agreement (such as a capacity agreement or codesharing) with country j in time t from the U.S. Department of Transportation's, Office of International Aviation.