The Impact of Approved Destination Status on Chinese Travel Abroad: An Economic Analysis

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Abstract

Since the early 1990s China's government has negotiated Approved Destination Status (ADS) with 120 countries. The agreements allow government-approved travel agencies to market group tours and obtain visas in bulk to ADS destinations. We apply a gravity model framework to analyze how ADS has affected Chinese outbound tourist travel from China using Chinese visitor arrivals data from 61 main foreign destinations of mainland Chinese tourists (which account for vast majority of international departures from China) from 1995 to 2005. Fixed effects estimates indicate ADS resulted in significant increases in arrivals from China (averaging 52 percent over three years). We also find evidence of travel diversion as more countries received ADS.

Keywords: China Outbound Travel, Approved Destination Status, Gravity Model, Tourism, International Agreements, Travel Liberalization

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The Impact of Approved Destination Status on Mainland Chinese Travel Abroad: An Econometric Analysis

Shawn Arita, Christopher Edmonds, Sumner La Croix, and James Mak

I. Introduction

Compared to its Asian neighbors, the People's Republic of China (hereafter referred to as China) was a latecomer to international outbound pleasure travel. China officially allowed its nationals to travel abroad for pleasure in 1990, and subsequently adopted a selective and incremental approach to the liberalization of overseas pleasure travel by specifying which countries its citizens could visit. Beginning in 1995, the Chinese National Tourism Administration (CNTA) formalized the Approved Destination Status (ADS) program under which countries designated as approved destinations could market group leisure tours in mainland China in cooperation with government-approved travel agencies.[1]

Travel agencies in China can only sell package tours to destinations with ADS agreements. Individuals in China who wish to travel to an approved destination can obtain visas arranged in bulk by a government-approved travel agency. ADS agreements have paved the way for much easier tourist travel abroad than was possible previously. By granting ADS designations to countries selectively and incrementally, China's approach to liberalization of overseas pleasure travel by its citizens stands in contrast to earlier across-the-board liberalization of overseas pleasure travel by Japan and South Korea.[2] By the end of 2008, China had awarded ADS to 120 countries; of which only 104 were operational.[3]

In this paper, we briefly review the history and consider possible motivations behind China's ADS program. We then apply a gravity model framework to examine tourism arrivals using pooled ordinary least squares and fixed effects estimators to model mainland Chinese visitor arrivals in over 60 countries between 1995 and 2005 to assess the impact of ADS agreements on mainland Chinese tourist arrivals in countries with ADS.

The gravity model has been a workhorse of empirical international trade analysis. It has been widely used to estimate the effects of trade agreements on trade flows (Baier and Bergstrand, 2007; Clarete, Edmonds, and Wallack, 2003; Rose, 2004). Application of the gravity model to tourism analysis has appeared more recently. For example, Eilat and Einav (2004) used a gravity model specification to analyze the determinants of international tourism flows. Gil-Pareja, Llorca-Vivero, and Martinez-Serrano (2006) employed the gravity model to estimate the magnitude of the increase in tourism flows among European Monetary Union countries due to the introduction of the euro. Neiman and Swagel (2009) applied a gravity model to analyze the impact of post-9/11 visa policies on travel to the United States.

Rising Chinese demand for outbound tourist travel has spawned a growing body of publications and research programs that focus on the analysis of mainland Chinese travel abroad. Most of this research has been descriptive and has not employed formal theoretical models or econometric methods. We are unaware of any econometric analyses that attempt to estimate the effects of ADS on mainland Chinese overseas travel. This paper aims to fill this gap in the literature, addressing two main questions. First, how much, if at all, does ADS affect the volume of visitor arrivals from China to the country

with the ADS agreement? Second, when an additional country negotiates an ADS agreement, how does the agreement affect the flow of mainland Chinese tourists to other countries in our sample? Mak and White (1992) found that in both Japan and South Korea, which removed barriers on outbound pleasure travel to all countries in a single stroke in 1964 and 1989, respectively, the total volume of overseas travel from both countries increased sharply. The very high tourism growth that Japan and Korea experienced in the years immediately following travel liberalization may be attributed to a "catch up" transition period, as outbound tourism from these countries caught up to long terms equilibriums long suppressed by travel restrictions. Because liberalization of travel from Japan and Korea applied to virtually all countries and increased visitor flows to all countries, it can be characterized as purely *travel augmenting.* In contrast, China's travel liberalization has involved negotiating ADS with individual countries, which would be expected to increase travel to those countries, *ceteris paribus*. However, it could also lead to diversion of travelers from other destinations. Thus, our empirical analysis considers whether China's selective liberalization was *travel diverting* as well as travel augmenting.

Section II provides a brief history of the development of outbound pleasure travel from China and the policy goals that may have prompted the creation of the ADS program. Section III specifies the gravity equation employed in the paper, discusses the unbalanced panel data used in the estimation, and presents and explains empirical results. In the final section, we summarize conclusions that can be drawn from our analysis, discuss their implications, and outline possible extensions to this research.

II. Background

Outbound pleasure travel from China began in 1983 when mainland Chinese from Guangdong Province were permitted to travel to Hong Kong on organized tours to visit relatives. This privilege was extended the following year to Macau visits, with residents from additional provinces permitted to join the tours as long as they had relatives or friends in Hong Kong and Macau (Lim and Wang, 2005, p. 2247; and WTTC, 2003, p. 22).

During the 1990s, China's government negotiated ADS agreements with a small number of neighboring countries in the Asia region. In 1991 China's government allowed travel on group tours to Malaysia, Singapore, and Thailand (Lim and Wang, 2005, p. 2247; WTTC, 2003, p. 22). These tours were organized by the Chinese Travel Service (CTS) and were available from a few of China's the most affluent coastal cities. By the end of the decade there were 9 ADS agreements in place, including the ones with Hong Kong and Macau (Table 1).

Starting in 2000, the pace at which ADS agreements were negotiated between China and other countries accelerated sharply, as did the number of mainland Chinese departures to foreign destinations (Table 1 and Figure 1).[4] By 2008, the number of international departures from mainland China reached 46 million, including mainland visits to Hong Kong and Macau (Arlt, 2009).[5]

In 2001, the World Tourism Organization (WTO) forecasted that China will send 100 million visitors abroad by 2020. If the WTO forecast turns out to be correct, it would make China the world's leading outbound tourist generating country. Some analysts

have argued that the forecast of 100 million visitors probably underestimates the size of the mainland Chinese outbound international travel market (European Travel Commission, 2007; Credit Lyonnais Securities Asia-Asia-Pacific Markets, 2005).[6] Such conjectures are fueled by the current travel propensity of China's population, which remains very low, as well as by comparison with the international travel experiences of other Asian countries that have enjoyed rapid rises in average incomes.[7]

Arlt (2006) and others (Zhang, 2006; Yu, 2006; Lim and Wang, 2005; Kim, Guo, and Agrusa, 2005; Sofield, 2002) have written extensively on China's outbound tourism policies. According to Arlt (2006, p. 42) policymakers in China were initially motivated to adopt a gradual and incremental approach to travel liberation in order to minimize the outflow of hard currency abroad. To meet the growing demand by Chinese citizens for leisure travel, the government initially favored the development of domestic tourism (Arlt, 2006, pp. 27, 40; Lim and Wang, 2005, p. 2247; World Tourism Organization, 2003, p. 20). The huge foreign exchange reserves accumulated by China since the Asian Financial Crisis have obviously rendered the goal of stemming hard currency outflows obsolete even though the ADS program remains in place. Disparities between the number of foreigners visiting China and the number of mainland Chinese overseas tourists created public pressure both from within and outside China to liberalize overseas travel by its citizens. China's accession to full membership in the World Trade Organization in December 2001 has also encouraged its government to reduce its restrictions on foreign travel by its citizens.

Viewed from a broader perspective, China's selective and incremental travel liberalization is consistent with the gradual and regulated liberalizations carried out by

the government in other areas of economic policy, e.g., foreign direct investment, currency and exchange rate, agricultural reform, and state-owned enterprise reform. From the perspective of the Chinese government, there are a number of advantages to gradual liberalization. It has enabled the country's leadership to satisfy, to some extent, the pent-up demand for travel abroad among its increasingly affluent citizens.[8] At the same time, it enabled policymakers to monitor and adjust travel policy based on early experience with initial ADS destinations. Because countries gaining ADS designation expect to reap substantial economic benefits,[9] an ADS agreement represents a bargaining chip that China's government can use in its diplomatic negotiations on other issues and can serve to strengthen relations with countries.[10] Early negotiation of ADS status with nearly all China's neighbors in the Asia region has likely helped China's government improve its political relations and facilitate economic integration with its strategically important neighbors.[11]

The terms of ADS agreements between China and recipient countries differ across countries and over time. Agreements negotiated relatively early, like those negotiated with Australia and New Zealand in 1999, and with Japan in 2000, initially permitted group tourist travel only from a few major Chinese cities; expansion to other Chinese cities came later. This step-wise approach was not applied to agreements with most other ADS countries. For some destinations such as Hong Kong and Singapore, conditional visa-free entry was part of the agreement (Lim and Wang, 2005, p. 2248). By contrast, the Memorandum of Agreement (MOU) signed between the U.S. and China in December 2007 stipulated that "[t]he U.S. Embassy and Consulates in China … process the visa applications of members of Chinese tourist groups in accordance with U.S. law,

regulation, and procedure," and still requires in-person interviews between the visa applicants and U.S. Embassy or consular officials in China. However, the MOU permits travel agencies in China to arrange for group interview appointments in contrast with the previous individual interviews. As ADS agreements are not created from a single template, it would not be surprising to find that the quantitative impacts of these agreements on Chinese visitor arrivals vary across ADS countries.

Casual examination of pre- and post-ADS visitor numbers highlights the heterogeneity of impacts of ADS across different countries. Table 2 summarizes average growth rates in visitor arrivals from China during the three years before and three years after ADS was obtained and compares these rates to the overall growth rate of outbound international travel from China during the corresponding periods. Pre-ADS and post-ADS growth rates of Chinese visitor arrivals vary substantially across countries. Three countries actually had post-ADS visitor arrival growth rates that were actually lower than pre-ADS growth rates. These cases tend to coincide, however, with shocks that would clearly reduce interest in travel to these countries, e.g., the Indian Ocean Tsunami (Maldives) and increases in the intensity of fighting related to ongoing civil wars (Nepal and Sri Lanka). The muddied picture that emerges from a casual inspection of the descriptive statistics on the growth of mainland Chinese visitor arrivals highlights the need to use multivariate regression analysis to control for the many confounding factors that influence visitor growth rates.

III. Model Specification, Data, and Empirical Results

We employ a gravity model estimation framework to examine international tourist travel from China. The name "gravity model" comes from an analogy to the law of

gravity in physics where mass and distance comprise the two key factors that explain the force of gravity between two objects. In the international tourist trade literature, "mass" is Gross Domestic Product (GDP) of the trading countries and "distance" is measured by the physical distance between pairs of countries and other variables measuring geographic proximity. The gravity model's analytical properties and links to standard theories of international trade have been established in a number of articles (Anderson, 1979; Bergstrand, 1985; Helpman and Krugman, 1985). In empirical international trade analysis, the gravity model focuses on determinants of the value of bilateral trade flows. Tourism gravity models focus on the determinants of visitor flows since time series data on visitor expenditures between pairs of countries are rarely available. These models specify the usual covariates to explain the volume of international travel between two countries as a function of the size of the two economies (as measured by GDP, population, area, etc.) and the distance between them. The main comparative static results from the models are that the larger the countries and the smaller the distance between them the greater the number of expected travelers.

Our empirical analysis uses two different estimation techniques in order to highlight the effects of time-invariant covariates specified in the gravity model and to measure as precisely as possible the estimated coefficients on ADS. Our first set of estimates is loosely based upon the gravity regression model developed by Anderson and Van Wincoop (2003). We use OLS to estimate the effects of ADS on tourist arrivals from China in approved destinations for a pooled data set of annual observations from 1995 to 2005. We estimate several different specifications of the following regression:

$$\ln(Visitor\_Arrivals_{it}) = \beta_0 + \phi ADS_{it} + \alpha TC_i + \varphi DA_{it} + \gamma_t + \varepsilon_{it}$$

where ln(*Visitor_Arrivals*$_{it}$) is the number of mainland Chinese visitor arrivals in destination *i* during year *t*; ADS_{it} is vector of binary variable indicating a country's approved destination status in year *t*, *t-1*, and *t-2*; TC_i is a vector of time-invariant variables controlling for trade costs; DA_{it} is a vector of time-varying and time-invariant variables controlling for destination attributes; and γ_t is a vector of time dummy variables. Because, the full impact of ADS on visitor flows may take time to be realized, we estimate specifications with one- and two-year lags on the ADS variable.[12]

Our second set of regressions uses fixed effects methods to estimate various specifications of the following regression (terms defined below):

$$\ln(Visitor\_Arrivals_{it}) = \beta_0 + \phi ADS_{it} + \beta_1 \ln(DEST\_GDP\_PC_{it}) + \beta_2 \ln(CHINA\_GDP_t) + \beta_3 \ln(W\_NADS_t) + \eta_i + \varepsilon_{it}$$

Inclusion of country fixed effects means that time-invariant control variables used in our pooled OLS estimates can no longer included in the regression. On the other hand, the fixed effects specification allows us to add two time-varying controls to the regression: $China\_GDP_t$ and W_NADS_t, the cumulative (weighted) number of countries that have been awarded ADS agreements.[13] Inclusion of $China\_GDP_t$ allows estimation of the income elasticity for Chinese outbound travel and provides another check on the model's plausibility. Inclusion of ln(W_NADS_t) controls for trade diversion that is likely to occur when other countries receive ADS agreements. This variable is an aggregate annual version of the country-specific multilateral resistance terms included in gravity regressions of trade flows (Anderson and van Wincoop 2004).[14]

Data on visitor arrivals from mainland China covers 61 countries. Made up of the leading international tourism destinations (in terms of total number of foreign visitors) during the years 1995 to 2005, published in the World Tourism Organization's *Yearbook*

of Tourism Statistics (WTO, various years; see the Data Appendix for the list of included countries), these 61 countries accounted for most of the international trips by mainland Chinese. For instance, in 2005, the *Yearbook of Tourism Statistics, 2001-2005* (WTO, 2007) reported 110 countries received 8.10 million visitor arrivals from China; while the 61 countries in our sample accounted for 7.39 million (more than 90 percent) of these visitors. Our analysis excludes mainland Chinese visitor arrivals in Hong Kong and Macau since these can be considered domestic destinations after reunification with China in 1997 and 1999, respectively. Data for a few larger tourism destination countries (e.g., France, Philippines) and several small countries (e.g., Pacific island countries) had missing years of data, displayed suspicious volatility in the volume of visitor arrivals, or reported very few visitors from China, so we excluded them from our sample.[15]

The WTO data were checked against arrivals statistics compiled by individual country national tourism administrations (NTAs). When our review of visitor statistics from NTAs suggested the WTO data contained coding errors or referenced out-of-date figures, we substituted data from the NTA sources.[16] Because a small number of the countries included in the data set have missing data some years, the final data set is an unbalanced panel. The Data Appendix details the definitions and references for all the variables used in our estimations.

Table 3 reports results from six specifications estimated using pooled OLS regressions. We considered using Generalized Method of Moments (GMM) estimators to attempt to capture the dynamics in the panel, but ultimately concluded that the panel available provides insufficient degrees of freedom to estimate the large numbers of parameters required for Arellano-Bond estimators with sufficiently power. We recognize

that pooled OLS estimates are unable to account for unobserved country-specific effects and potentially endogenous regressors, such as ADS_{it}. However, Hauk and Wacziarg (2004) show that pooled OLS estimates have two distinct advantages over more complex dynamic techniques: they are easy to understand and, most importantly, do not rely upon problematic identification assumptions. We proceed with pooled OLS estimation with a robust variance matrix estimator due to the presence of serial correlation in the error terms.[17]

Since it may take time for Chinese tourists and tourism business to adjust to a destination's country ADS status, we estimate regressions with one and/or two year lags of ADS. Our specifications also use three proxies for the quality of the country as a tourist destination (its attractiveness or 'gravity' as a tourism destination): the destination countries': GDP per capita ($DEST\_GDP\_PC_{it}$), total GDP ($DEST\_GDP_{it}$), and land area ($AREA_i$). The two GDP variables provide information on the variety and quality of goods and service available at destinations within the country, while $AREA_i$ provides a separate control for the variety of destinations within a country.[18]

In regressions that use total GDP in the destination country (Table 3, columns 1-3), estimated coefficients on $\ln(DEST\_GDP_{it})$ are positive and statistically significant at the five percent level as expected under the gravity model, while coefficients for $\ln(AREA_i)$ are negative but not statistically different from zero at the ten percent level. In regressions with destination GDP per capita (Table 3, columns 4-6), estimated coefficients on $\ln(DEST\_GDP\_PC_i)$ are positive, as expected, and statistically significant at the five percent level, and coefficients for $\ln(AREA_i)$ are positive and statistically significant at the five percent level.

Following the gravity model, the distance between countries ln(*DISTANCE*$_i$*)* and three other time-invariant variables (*LANDLOCKED*$_i$, C*ONTIGUOUS*$_i$, *ISLANDS*$_i$) are included to control for the cost of travel in estimates of travel flows between China and destination countries. These proxies are widely used in empirical trade studies employing the gravity model (e.g., Clarete, Edmonds, and Wallack, 2003; Rose 2004; Anderson and Wincoop 2004), and we include the full set in each of the six pooled OLS specifications. *LANDLOCKED*$_i$ and *ISLANDS*$_i$ are usually included in gravity equation models to control for traders' lack of access to ocean transport (*LANDLOCKED*$_i$) or land transport (*ISLANDS*$_i$). Since virtually all China outbound travelers fly to their destinations, these variables should be less relevant for a gravity analysis of visitor arrivals. Following this line of reasoning, ln(*DISTANCE*$_i$) should be highly relevant due to its positive correlation with air fares, which are a large part of the total cost of an international trip. *CONTIGUOUS*$_i$ is typically included in gravity equation models to control for the relatively easier international travel required when only a single customs point must be cleared. However, this is likely to be a factor that is more important in the case of trade where access to surface transport and need to clear goods through customs only once may figure more prominently in determining trade flows. Since virtually all outbound travelers from China to the countries included in our data set (which excludes for Hong Kong and Macau) exit the county via air, *CONTIGUOUS*$_i$ would also appear to be less relevant for our analysis.

Our main proxiy for ease and cost of travel—ln(*DISTANCE*$_i$)—has a consistent negative sign and level of statistical significance (five percent level) in all specifications. The estimated coefficients on ln(*DISTANCE*$_i$) are substantial in magnitude. Estimated

coefficients on $ISLANDS_i$ have the expected negative sign but are not statistically significant at the ten percent level (Table 3, columns 1-6). The performance of the other two proxies for trade costs—$LANDLOCKED_i$ and $CONTIGUOUS_i$—varies across specifications. In regressions using overall destination GDP as a proxy for destination quality (Table 3, columns 1-3), estimated coefficients for both variables have the expected sign—negative for $LANDLOCKED_i$ and positive for $CONTIGUOUS_i$—but are not statistically significant at the ten percent level. In regressions using destination GDP per capita as a proxy for destination quality (Table 3, columns 4-6), estimated coefficients for both variables once again have the expected signs, and are statistically significant at the five percent and ten percent levels, respectively.

In sum, the estimated coefficients on the various control variables for destination variety, destination quality and trade costs have the expected signs and are generally statistically significant. These results signal that the gravity model specification is consistent with the underlying data and provide some confidence that the estimated coefficients on the main variables of interest—ADS_{it} and lags of ADS_{it-1} and ADS_{it-2}—are not anomalies. We note also that estimated coefficients on control variables are consistent with those found in other studies employing econometric models of visitor arrivals (Gil-Pareja et al. 2007).

Estimated coefficients on ADS_{it} and its lags are positive, substantial in magnitude, and statistically significant at the 5 percent level in all but one specification (Table 3, column 1), and in this instance the one-year lag of ADS (ADS_{it-1}) is statistically significant at the 10 percent level. Following Kennedy (1981) and van Garderen and Shah (2002), we convert the estimated coefficients for ADS and lags of ADS into an

estimate of the cumulative percentage change in visitor arrivals over a three-year period after ADS status is granted, i.e., ADS switches from zero to one. The results are very consistent across the six specifications, with point estimates of the average percentage change in visitor arrivals after ADS designation ranging from 257.2 to 319.1. Adjusted R^2 values for the model specifications range between 0.66 and 0.69, suggesting the model succeeded in explaining most of the variation in visitor arrivals from mainland China.

While the results for the pooled OLS are encouraging in terms of the statistical significance of individual parameter estimates and overall model goodness of fit, the magnitude of the estimated percentage impact of ADS on Chinese outbound visitor flows appear implausibly high. In particular, they seem inconsistent with the simple unadjusted changes in visitor flows for ADS countries reported in Table 2. A shortcoming of the pooled OLS estimates is that they are unable to account for unobservable heterogeneity across countries. Overall destination attractiveness, weather, level of tourism infrastructure, the country's relations with China and unmeasured travels costs are examples of factors not fully captured by pooled OLS methods that may bias estimated coefficients on ADS_{it} and its lags. When, however, a substantial portion of the unobserved country characteristics are time invariant, a typical strategy to allow identification of the effect of a "treatment" (such as an ADS agreement) is to estimate the regression using a fixed effects estimator.

As discussed above, specifications using the fixed effects estimator are able to include time-varying controls ($\ln(CHINA\_GDP_t)$ and $\ln(W\_NADS_{it})$) yield estimated coefficients that are of interest to the researcher and provide additional checks on the model specification. Table 4 reports results from six fixed-effects estimations.

Estimated coefficients on ln($CHINA\_GDP\_PC_t$) can be interpreted as elasticities; they vary between 1.17 and 1.78 across the six specifications and are statistically significant at the five percent level.[19] These estimates are somewhat lower than income elasticities for international travel from Northern Europe (2.06), Oceania (2.55) and developed Asia (4.45), are commensurate (in their upper range) with elasticities for North America (1.74) and Southern Europe (1.67), and are much larger than the elasticity for Latin America (0.28) (Crouch 1995).

Estimated coefficients on ln($DEST\_GDP_{it}$), are, as expected, uniformly positive and are statistically significant at the 5 percent level in the three specifications using total rather than per capita GDP (Table 4, columns 1-3). While in the three specifications using ln($DEST\_GDP\_PC_{it}$) (Table 4, columns 4-6), estimation coefficients are significant at the 10 percent level in two of the three specifications. Implied elasticities of destination attraction to mainland Chinese visitors with respect to changing income in the destination countries range from 0.88 to 0.97 for $DEST\_GDP\_PC_{it}$ and from 1.14 to 1.24 for $DEST\_GDP_{it}$.

Against the background of estimates on control variables with expected signs and statistical significance, we examine the impact of current and lagged ADS variables on mainland Chinese visitor arrivals in ADS countries. Estimated coefficients on all current and lagged ADS variables are uniformly positive in all six specifications. ADS_{it} and ADS_{it-1} are statistically significant at the five percent level in specifications with only a current year ADS variable (Table 4, columns 3 and 6) or with current year ADS and one year lag ADS variables (Table 4, columns 2 and 5). When a second year lag of the ADS (ADS_{it-2}) is added (columns 1 and 4), estimated coefficients on this variable are

statistically significant only at the ten percent level, while those on ADS_{it-1} lose statistical significance.[20] Following the same procedures used in the pooled regressions to convert the estimated coefficient on the ADS binary variables into percentage changes in Chinese visitor arrivals, we find that the impact of ADS increases as we include one- and two-year lags of ADS in the regressions. When only a current ADS variable is included, ADS increases visitor flows by 34.2 to 37.0 percent. When one ADS lag is included the cumulative impact rises to a range of 42.2 to 44.4 percent. When a second ADS lag is added, the cumulative impact rises to a range of 50.8 to 52.1 percent. These results indicate that the ADS agreements positively and significantly increase travel to ADS countries, thus indicate the trade augmenting effect of ADS. This magnitude of the implied effect of ADS is far smaller in the fixed effects estimates than the pooled OLS estimate (Table 3) and more in line with our expectations as explained earlier in the paper.

Estimated coefficients on $\ln(W\_NADS_t)$ are uniformly negative and statistically significant at the five percent level. The elasticities of visitor arrival diversion (i.e., the marginal change in mainland Chinese visitor arrivals as the total number of ADS countries rise) are small but economically significant, ranging from -0.13 to -0.21. Thus, a 10 percent increase in weighted ADS agreements reduces visitor arrivals from China at each destination receiving Chinese tourists—with or without ADS—by 1.3 to 2.1 percent. The finding that ADS agreements have travel diversion, as well as travel augmenting, impacts is not surprising given the preferential treatment of selected countries under the ADS policy. Preferential bilateral or regional trade agreements are expected to divert

trade from other countries, and ADS agreements fit neatly into this category of preferential liberalization.

IV. Conclusion

Our research yields two important empirical findings. First, results provide empirical evidence that ADS status has substantially increased mainland Chinese visitor arrivals in ADS countries. Coefficients for the binary variable indicating ADS status as well as one- and two-year lags of ADS status were positive and statistically significant across pooled OLS and fixed effects estimators and model specifications. The fixed effects estimates found that three years after receiving ADS, the number of mainland Chinese visitors increased by an average of between 34.6 and 52.1 percent.

Nonetheless, caution is warranted in interpretation of our results. First, they are derived from the experiences of countries that were early recipients of ADS designations, as the last year covered in our dataset was 2005; 43 of the 120 countries with ADS (through 2009) received ADS after 2005. So our results may not apply to later recipients. Second, the estimated results cover a period in which China actively liberalized its policies toward international travel. Recalling the very high rates of outbound international travel growth that followed earlier instances when other East Asian countries relaxed stringent restrictions on international travel (Japan in 1964 and Korea in 1989), one can expect that outbound international travel by mainland Chinese would grow at very high rates in the immediate post-liberalization years as pent up consumer demand is satisfied and the country catches up to long run travel propensities. Thus, our estimates of the impact of ADS on early adopters can be expected to overstate the impact

of ADS on later adopters. Third, our results indicate that the expansion of ADS agreements has led to some travel diversion from existing destinations to new ADS recipient countries. Nonetheless, we find that the travel augmenting effect of ADS liberalization dominates the travel diverting effect and overall ADS has greatly increased the number of mainland Chinese traveling to foreign destinations.

We are also aware of the limitations of cross-country empirical analysis. Measurement error in both dependent and independent variables is inherent when data is collected across 61 countries. Unavoidable reliance on proxy variables to measure travel costs and the attractiveness of destination countries, and simple binary characterization of ADS agreements that are in fact diverse in their details and the extent of liberalization they bring about represent other notable shortcomings in our research. In addition, there are several econometric pitfalls of using pooled OLS and fixed effects estimators to estimate the effects of ADS agreements on overseas travel by mainland Chinese. For example, data limitations prevent full treatment of measurement errors in both the dependent variable and the ADS variable.

This paper has only partially addressed the problem of multilateral resistance common to gravity model estimates. The existence of time-varying relative differences in resistance to foreign travel can lead to omitted variable bias since the fixed effects estimator can control for only unobserved variables that do not vary over time. Second, the estimation procedures applied treat ADS as exogenous from visitor flows, but we recognize that it could be endogenous. The existence of time-varying relative differences in resistance to foreign travel leads to omitted variable bias, since fixed effects estimates control for unobserved heterogeneity between countries only if these are fixed over time.

The estimates reported in the paper can also be criticized for treating which countries negotiate ADS agreements with China as randomly determined (and exogenous to travel flows before ADS), when it is clear that China and the countries with ADS has been negotiated do not represent a random sample of all countries. Propensity score matching methods could potentially be used to resolve these problems. These shortcomings, suggest a promising course of future work to derive more precise estimates of the effect of ADS on outbound international travel. Nonetheless, these early results provide important information about the impact of ADS. Though admittedly imprecise, estimation results on the ADS variables were obtained consistently across various model specifications and displayed magnitudes of effects on mainland overseas travel to suggest that ADS has had a large positive effect on this travel.

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Data Appendix: Countries and years included in the data set

	Destination Country	Years		Destination Country	Years
1	Albania	1999-2005	35	Morocco	1995-2005
2	Australia	1995-2005	36	Myanmar	1998-2005
3	Bahrain	1995-2005	37	Nepal	1995, 1999-2005
4	Bangladesh	1995-2005	38	New Zealand	1995-2005
5	Belgium	1995-2005	39	Nicaragua	1999-2005
6	Botswana	1995-2004	40	Nigeria	1995-2005
7	Brazil	1995-2005	41	Pakistan	1995-2005
8	Bulgaria	1995-2005	42	Papua New Guinea	1997-2005
9	Cambodia	1995-2005	43	Peru	1995-2005
10	Canada	1995-2005	44	Poland	1995-2005
11	Chile	1995-2005	45	Romania	1995-2005
12	Costa Rica	1995-2005	46	Russia	1999-2005
13	Cuba	1995-2005	47	Saudi Arabia	2000-2005
14	Egypt	1995-2005	48	Singapore	1995-2005
15	Finland	1995-2005	49	Slovak Republic	1997-2005
16	Germany	1995-2005	50	South Africa	1995-2005
17	Ghana	1999-2005	51	Spain	1995-1998
18	Guatemala	1995-2005	52	Sri Lanka	1995-2005
19	Honduras	1999-2005	53	Switzerland	1997-2003, 2005
20	India	1995-2005	54	Thailand	1995-2005
21	Indonesia	1995-2005	55	Turkey	1995-2005
22	Iran	1995-2002	56	Uganda	1999-2005
23	Israel	1995-2005	57	Ukraine	1998-2003, 2005
24	Italy	1995-2005	58	United Kingdom	1995-2005
25	Japan	1995-2005	59	United States	1995-2005
26	Jordan	1995-2005	60	Venezuela	1995-2005
27	Kazakhstan	2000-2005	61	Vietnam	1995-2005
28	Korea	1995-2005			
29	Kuwait	1999-2004		Special Administrative Regions*	
30	Lao PDR	1995-2005			
31	Lebanon	1999-2005		Hong Kong	1995-2005
32	Malaysia	1995-2005		Macau	1995-2005
33	Maldives	1999-2005			

***** Data on Hong Kong and Macau were excluded from the sample used in the gravity model estimates.

Variable Definitions and Data Sources

China Real GDP Per Capita (*CHINA_GDP_PC$_t$*)**:** World Bank (2009). *World Development Indicators* (Online Database). Reported in year 2000 $US. Statistics retrieved in March 2009.

Destination Per Capita GDP (*DEST_GDP_PC$_{it}$*): World Bank (2009). *World Development Indicators* (Online Database). Reported in year 2000 $US. Statistics retrieved in March 2009.

Distance (*DISTANCE$_i$*)**:** Average kilometers from Shanghai and from Beijing to capitol city of each country calculated using 'great circle' distance. From Geobytes "City Distance Tool" (http://www.geobytes.com/CityDistance Tool.htm?loadpage). Last accessed 8 September 2008.

Destination Country Area (*AREA$_i$*)**:** Total area including water and land in square Kilometers. Central Intelligence Agency, *The World Factbook*. At http://www.cia.gov/library/ publications/the-world-factbook. Last accessed on 9 September 2008.

Visitor Arrivals from China (*Visitor_Arrivals$_{it}$*): World Tourism Organization (2004a, 2006, 2007), verified and filled in with data from National Tourism Agency on-line data among recipient countries.

Destination Countries Bordering China (*CONTIGUOUS$_i$*)**:** Dummy variable taking value of "1" for the following countries: North Korea, Vietnam, Lao PDR, Myanmar, Nepal, India, Kazakhstan, Mongolia, Russia, and Pakistan.

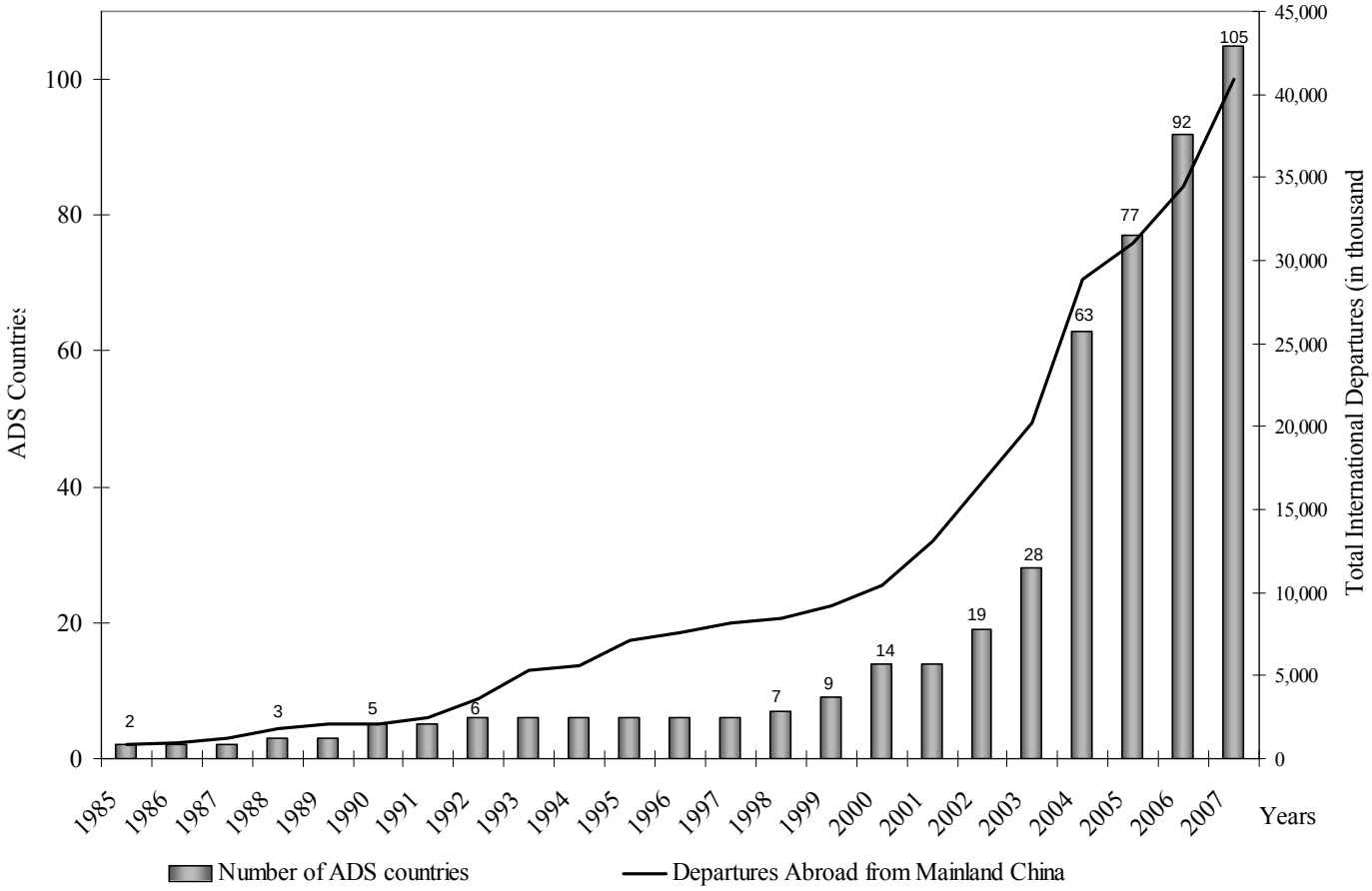
ADS Status *(ADS$_{it}$)***:** Dummy variable taking value of "1" if country has an ADS agreement with China and "0" otherwise. Variable created based on reports of China National Tourism Administration (2009) and a list from Professor Zélia Breda (personal communication). The list covers ADS agreements thru September 2009. The CNTA and Breda lists are the same through 2004. The Breda list has more ADS countries (120) than the CNTA list (104), and the additional countries on the former appear to involve countries that signed a Memorandum of Understanding with China for ADS but have not made the agreements operational.

Cumulative ADS Agreements (*W_NADS$_t$*)**:** The number of countries with ADS agreements in a given year weighted by the proportion of total tourism arrivals to the rest of the world (weights are based off year 2000 arrivals). *World Development Indicators* (Online Database). Statistics retrieved in October 2009.

Land Locked (*LANDLOCKED$_i$*): Dummy variable taking value of "1" if the destination country's coastline is 0 km. Central Intelligence Agency, *The World Factbook*. At http://www.cia.gov/library/ publications/the-world-factbook. Last accessed on 11 November 2009.

Island *(ISLANDS$_i$)*: Dummy variable taking value of "1" if destination country's land boundaries is 0 km. *The World Factbook*. At http://www.cia.gov/library/ publications/the-world-factbook. Last accessed on 11 November 2009.

Figure 1. Number of ADS Countries and International Departures from China



Sources: Number of Departures from World Tourism Organization (2004a, 2006, 2007), verified and filled in with data from National Tourism Agency on-line data among recipient countries. Number of ADS countries from CNTA (2009) and list from Professor Zélia Breda (personal communication)

Table 1. Approved Destination Status (ADS) Agreements by Year

Year	Recipient	Cumulative Total with ADS
1983	Hong Kong, Macau	2
1988	Thailand	3
1990	Malaysia, Singapore	5
1992	Philippines	6
1998	South Korea	7
1999	Australia, New Zealand	9
2000	Brunei, Cambodia, Japan, Myanmar, Vietnam	14
2002	Egypt, Indonesia, Malta, Nepal, Turkey	19
2003	Croatia, Cuba, Germany, Hungary, India, Maldives, Pakistan, South Africa, Sri Lanka	28
2004	Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Ethiopia, Finland, France, Greece, Iceland, Ireland, Italy, Jordan, Kenya, Latvia, Liechtenstein, Lithuania, Luxembourg, Mauritius, Netherlands, Norway, Poland, Portugal, Romania, Seychelles, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tanzania, Tunisia, Zambia, Zimbabwe	63
2005	Antigua and Barbuda, Barbados, Brazil, Chile, Fiji, Jamaica, Lao PDR, Lesotho (B), Mexico, Northern Mariana Islands, Peru, Russia, United Kingdom, and Vanuatu	77
2006	Algeria (B), Bahamas, Benin (B), Botswana (B), Cameroon (B), Gabon (B), Grenada, Madagascar (B), Mongolia, Mozambique (B), Nigeria (B), Rwanda (B), Saint Lucia (B), Tonga, Uruguay (B)	92
2007	Andorra, Argentina, Bangladesh, Bulgaria, Monaco, Morocco, Namibia, Oman, Syria, Trinidad and Tobago (B), Uganda, United States, and Venezuela	105
2008	Costa Rica (B), Federated States of Micronesia (B), French Polynesia, Israel, Lebanon (B), and Taiwan	111
2009	Cape Verde, Dominica, Ecuador, Ghana, Guyana, Mali, Montenegro, Papua New Guinea, and United Arab Emirates	120

Sources and Notes: China National Tourism Administration (2009) and a list from Professor Zélia Breda (personal communication). The list covers ADS agreements thru September 2009. The CNTA and Breda lists are the same through 2004. The Breda list has more ADS countries (120) than the CNTA list (104), and the additional countries on the former appear to involve countries that signed a Memorandum of Understanding with China for ADS but have not made the agreements operational. ADS countries on the Breda list but not the CNTA list are designated by (B) in the Table.

Table 2. Average Growth Rates in Visitor Arrivals from China

Country (ADS year)	Average Growth Rate in Chinese Visitor Arrivals 3 years before ADS	3 years after ADS	Difference
	(1995 to 1997)	*(1998 to 2000)*	
South Korea (1998)	0.153	0.295	0.142
China overall	0.415	0.229	-0.186
	(1996-1998)	*(1999-2001)*	
Australia (1999)	0.216	0.274	0.058
New Zealand (1999)	0.250	0.482	0.231
China overall	0.249	0.189	-0.601
	(1997-1999)	*(2000-2002)*	
Cambodia (2000)	0.105	0.292	0.187
Japan (2000)	0.069	0.154	0.084
Vietnam (2000)	0.087	0.148	0.061
China overall	0.178	0.236	0.057
	(1999-2001)	*(2002-2004)*	
Egypt (2002)	0.175	0.361	0.186
Indonesia (2002)	0.070	0.166	0.096
Nepal (2002)	0.610	0.209	-0.401
Turkey (2002)	0.112	0.136	0.024
China overall	0.189	0.194	0.005
	(2000-2002)	*(2003-2005)*	
Cuba (2003)	0.171	0.267	0.096
Germany (2003)	0.151	0.175	0.024
India (2003)	0.368	0.433	0.065
Maldives (2003)	0.455	0.059	-0.396
Pakistan (2003)	0.086	0.516	0.430
South Africa (2003)	0.106	0.192	0.086
Sri Lanka (2003)	0.381	0.330	-0.051
China overall	0.236	0.141	-0.095
Unweighted average among ADS countries listed above	0.210	0.264	0.042

Note: "3 years after ADS" includes the year in which ADS was implemented.

Table 3. Pooled OLS Estimates: Visitor Arrivals from China, 1995-2005

	Model specifications					
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	3.695	4.257	4.980	11.460 **	11.920 **	12.620 **
	(3.292)	(3.307)	(3.324)	(2.098)	(2.105)	(2.130)
ADS_{it}	0.580 **	0.577 **	1.346 **	0.657 **	0.654 **	1.385 **
	(0.192)	(0.192)	(0.307)	(0.181)	(0.182)	(0.305)
ADS_{it-1}	0.185 *	1.076 **		0.227 **	1.026 **	
	(0.103)	(0.273)		(0.102)	(0.283)	
ADS_{it-2}	1.225 **			1.098 **		
	(0.314)			(0.342)		
$DEST\_GDP_{it}$	0.552 **	0.550 **	0.551 **			
	(0.091)	(0.091)	(0.092)			
$DEST\_GDP\_PC_{it}$				0.679 **	0.681 **	0.684 **
				(0.121)	(0.122)	(0.123)
$DISTANCE_i$	-0.995 **	-1.060 **	-1.138 **	-1.329 **	-1.387 **	-1.463 **
	(0.265)	(0.273)	(0.282)	(0.239)	(0.244)	(0.251)
$AREA_i$	-0.004	-0.002	-0.004	0.269 **	0.269 **	0.268 **
	(0.081)	(0.085)	(0.089)	(0.067)	(0.070)	(0.073)
$LANDLOCKED_i$	-0.020	-0.054	-0.064	-0.944 *	-0.972 *	-0.984 *
	(0.621)	(0.623)	(0.627)	(0.563)	(0.561)	(0.563)
$ISLANDS_i$	0.092	0.107	0.118	-0.151	-0.139	-0.130
	(0.340)	(0.364)	(0.390)	(0.349)	(0.365)	(0.380)
$CONTIGUOUS_i$	1.226	1.163	1.076	1.592 **	1.541 **	1.462 **
	(0.834)	(0.854)	(0.855)	(0.647)	(0.666)	(0.672)
Sample size	586	586	586	586	586	586
Adjusted R^2	0.682	0.671	0.661	0.688	0.680	0.670
Pct. change due to ADS	319.1	257.4	266.5	297.4	257.2	281.3

Notes: Standard errors in parentheses. Continuous variables are in natural logs.

** estimated coefficienct is statistically significant (p>.05)

* estimated coefficienct is statistically significant (p>.10)

Table 4. Fixed Effects Estimates: Visitor Arrivals, 1995-2005

	Model specifications					
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-27.770 **	-29.070 **	-29.970 **	-9.236 **	-9.605 **	-9.781 **
	(10.800)	(10.420)	(10.060)	(3.973)	(3.918)	(3.885)
ADS_{it}	0.214 **	0.206 **	0.319 **	0.197 **	0.188 **	0.301 **
	(0.077)	(0.077)	(0.092)	(0.078)	(0.079)	(0.091)
ADS_{it-1}	0.107	0.202 **		0.100	0.202 **	
	(0.071)	(0.086)		(0.070)	(0.086)	
ADS_{it-2}	0.167 *			0.180 *		
	(0.099)			(0.099)		
$DEST\_GDP_{it}$				0.881	0.931 *	0.972 *
				(0.529)	(0.521)	(0.516)
$DEST\_GDP\_PC_{it}$	1.144 **	1.201 **	1.244 **			
	(0.481)	(0.464)	(0.449)			
$CHINA\_GDP_{t}$	1.206 **	1.190 **	1.172 **	1.777 **	1.773 **	1.748 **
	(0.314)	(0.312)	(0.310)	(0.383)	(0.385)	(0.387)
W_NADS_{it}	-0.140 **	-0.138 **	-0.130 **	-0.210 **	-0.208 **	-0.197 **
	(0.055)	(0.055)	(0.055)	(0.089)	(0.090)	(0.091)
Sample size	586	586	586	586	586	586
Adjusted R^2	0.540	0.540	0.540	0.530	0.530	0.530
Pct. change due to ADS	52.1	44.4	37.0	50.8	42.2	34.6

Notes:
Standard errors in parentheses. Continuous variables estimated in natural logs.
** estimated coefficienct is statistically significant (p>.05)
* estimated coefficienct is statistically significant (p>.10)

Endnotes

[1] More precisely, tour operators from countries with ADS must work with approved travel agencies in China to market group package tours. Before travel liberalization, mainland Chinese could travel abroad on official and business trips or to study abroad, but were not permitted to travel abroad on pleasure trips. Those who wished to go on pleasure trips had to state some other acceptable reason for their trips.

[2] See Mak (2004), Chapter 9; and Mak and White (1992).

[3] The total number ADS agreements negotiated is taken from China National Tourism Administration (2009) and a list from Professor Zélia Breda (personal communication), and covers ADS agreements thru September 2009. The number of operational ADS agreements are based on CNTA (2009).

[4] However, some of these countries have not initiated group tours under ADS rules (European Travel Commission, 2007, p. 9).

[5] In 2005, the number of visitor arrivals in Hong Kong and Macau from China totaled 23 million; all other countries (where data on arrivals from mainland China were available) received slightly over 8 million visitors from China (World Tourism Organization, 2007).

[6] WTO data count each "visit" to a country as a "visitor." For example, one person from China who visits Malaysia eight times in a year is counted as eight visitors in the data for that year.

[7] Arlt (2006, p. 19) notes that only about 4 percent of China's population has ever traveled abroad if one does not count travel by mainland Chinese to Hong Kong and Macau as international travel. Overall, the propensity of mainland Chinese to travel abroad—i.e., the annual number of outbound departure relative to the country's population—is only about 2 percent (CLSA Asia-Pacific Markets, 2005, p. 7). By comparison, Japan's travel propensity abroad reached its peak of 14 percent in 2000 before falling after 9/11 (2001) and the SARS epidemic (2003). South Korea's travel propensity abroad in 2000 was 11.7 percent (World Bank, 2009). Not all analysts agree with this robust view of potential mainland Chinese travel abroad. Some argue that there has been irrational exuberance regarding prospects for China outbound travel. For example, Love, et al. (2006) believe that until China achieves a GDP per capita above US$15,000 (whereas its 2007 GDP per capita was US$1,200), China will have a "long way to go before [its] GDP-per-capita growth will translate into commensurate increase for long-haul travel."

[8] Under the ADS program, mainland Chinese do not necessarily have the option of traveling to countries they prefer. For example, Kim, Guo, and Agrusa (2005) found that while mainland Chinese indicated strong interest in travel to the United States, the United States did not receive an ADS designation until December, 2007. The first group of

mainland Chinese visitors arrived in the United States in June 2008 under the new agreement.

[9] There are also some potential costs. Foremost among the concerns were problems with visitor screening, espionage, and visitors overstaying their visas (Sofield 2002; Arlt 2006, p. 43). One method employed by travel agencies in China to prevent visitor overstays is to collect large deposits from their customers traveling to some countries; the deposits are returned upon their return to China. For example, mainland Chinese tourists visiting the European Union must post security bonds of 50,000 to 100,000 yuan with their travel agencies. Travel agencies that have excessive number of non-returnees could have their designation as ADS travel agencies revoked. Not surprisingly, travel agencies have developed their own extra-government controls to discourage overstays. See Sofield (2002) for examples.

[10] For example, Costa Rica negotiated ADS in 2008, the year after it broke off formal diplomatic relations with Taiwan.

[11] Kim, Guo, and Agrusa (2005, p. 212) reported seven factors that they believe Chinese government officials review when they consider a country for ADS designation: "First, the countries should generate outbound tourists to China. Second, the country should have a favorable political relationship with China. Third, the countries should have attractive tourist resources and suitable facilities for Chinese travelers. Fourth, the safety of the Chinese travelers should be guaranteed along with freedom from discrimination. Fifth, the destination countries should be easily accessible by transportation. Sixth, the outbound tourists from the destination countries should have a balance with China in terms of tourists' expenditures. Seventh, the market share of tourists from foreign countries to China, along with tourists from China to these countries, should be increased reciprocally."

[12] Baier and Bergstrand (2007) adopt a similar approach for testing the effects of Free Trade Agreements on trade volumes.

[13] We weighted a country's ADS status by its share in world tourism flows. Weights are necessary to account for the differential impacts of ADS agreements with smaller and larger tourism industries.

[14] W_NADS_t does not strictly correspond to the gravity literature's multilateral resistance variables as it is not a country-specific measure of trade barriers in other countries that affect a particular country's visitor arrivals.

[15] For example, France reported arrivals of mainland Chinese together with arrivals from other East Asian nations and therefore had to be dropped. We dropped the Philippines from our sample when we judged the year-to-year fluctuations in arrivals from China to be implausible. Additionally, a few other countries (Monaco and Myanmar) had to be dropped when critical explanatory variables, such as GDP per capita were unavailable.

[16] For example, in some cases the WTO database reported visitor arrivals for "Chinese nationals" one year and visitor arrivals for "Chinese residents" the next year. We have constructed a consistent series of visitor arrivals for each country by correcting or adjusting inconsistent series using data reported by NTAs.

[17] We follow methods specified by Wooldridge (2002, 176-178) for testing for serial correlation. After running the pooled OLS regression, we regress visitor arrivals on the same set of covariates and on lagged residuals from the first regression. A t-test shows that the estimated coefficient of the lagged residuals is statistically significant from zero at the one percent level; this is consistent with serial correlation. We responded in two ways. First, as noted in the text, we computed a robust variance matrix estimators for the pooled sample; Table 3 reports results using those standard errors. Second, we estimated the pooled regressions using generalized least squares and found that our main results were unchanged.

[18] The estimated coefficient on $AREA_i$ could also be associated reflect the higher transportation costs associated with side trips to tourist or business destinations within a larger country. The negative effects of additional transportation costs could, if sufficiently large, change the expected sign for this coefficient from positive to negative. It is notable that Chinese outbound travel to some of the largest countries in our data set, e.g. Brazil, Canada, Indonesia, India, South Africa, and the United States, is relatively small, comprising less than 14 percent of Chinese visitors arrivals in our 1995 sample (excluding Hong Kong and Macau) and 9 percent in our 2005 sample (excluding Hong Kong and Macau).

[19] The WTO's 2020 travel forecasts (WTO, 2004) assumed that growth in per capita income will be the primary driver of international tourism from China; the research team assumed an income elasticity of demand for Chinese outbound travel of 2.0 (based on personal communication with staff from the WTO regarding the organization's 2020 forecasts).

[20] The estimated coefficient on ADS lagged one year is not statistically significant at the 10 percent level using a two-tail *t*-test, but is statistically significant using a one-tail *t*-test. The one-tail test is appropriate in both pooled and fixed effects estimates, as trade theory informs us that elimination of an export quota (i.e., China's prohibition of group tourism travel to non-ADS countries) should lead to an increase in exports (outbound visitors from China).