

# ECONOMIC BENEFITS ASSOCIATED WITH THE VISA WAIVER PROGRAM – A DIFFERENCE-IN-DIFFERENCE APPROACH

Xiaochu Hu, George Mason University

## ABSTRACT

*This study evaluates the economic benefit that the Visa Waiver Program (VWP) brings to the United States, including decreased spending on administration and increased tourism. To capture the “net-effect” of VWP due to increased tourism, this study conducts a semi-experimental evaluation by introducing a control group – it pairs a VWP member country with a non-member country. The results show a net increase of 3-4.5 tourism/business trips per thousand population for a VWP participating country. It concludes that in 2010, because the VWP was in place, the U.S. government has saved from 1.9 billion to 3.2 billion for the cost of interviewing visitors. In sum, this research provides more concrete evidence to the discussion of VWP’s future expansion.*

**JEL:** C23, F22

**KEYWORDS:** economic analysis, Immigration policy, Visa Waiver Program, difference-in-differences, tourism

## INTRODUCTION

The VWP is perhaps the most important policy that shapes the mobility of tourist and business travelers to the United States. Administered by the Department of Homeland Security (DHS), the VWP enables participating country nationals to travel in the United States visa-free for up to 90 days for tourist and business purposes. In 2010, there are more than 40 million tourists and business travelers entering the United States, accounting for 87 percent of the total non-immigrant admissions to the United States. Among all tourists and business travelers, 45 percent entered the country under the VWP (DHS, 2011). The VWP is clearly shaping the world population’s (at least participating countries’ nationals for now) mobility to the United States. The VWP’s primary goals are to “eliminate unnecessary barriers to travel, stimulating the tourism industry, and permitting the Department of State to focus consular resources in other areas.” (U.S. Department of State, 2012) The program was first introduced in 1986 as a pilot program with only UK and Japan as member countries. Nationals of VWP countries must meet eligibility requirements including a less than 3 percent of non-immigrant visa refusal rate and no conflict with law enforcement or US security interests. Countries can go in and out of the program depending on the risk they present violating the US immigration law or national security. Currently, 36 countries participate in the VWP, 23 of which are European Union (EU) members (Table 1) (U.S. Department of State, 2012).

The VWP forms a close business and national security alliance between the U.S. and participating countries and thus bears great diplomatic significance. Member countries offer reciprocity to entitle US citizens to travel visa-free as well as share the national security information. Countries view participating in the VWP a diplomatic privilege with the United States. Currently, 11 countries with interest of joining the program are waitlisted in the “road map” and to be discussed. Since the program came into being in 1986, 29 countries have joined the alliance until 2001. After 9/11, concerns that WVP being exploit by terrorists or other criminals roared and the growth slowed down. During the recent economic recession, President Obama signed the Travel Promotion Act of 2009 (TPA) into law in April 2010 to promote more countries to join the VWP. “When international visitors come to the United States they spend money on a

wide range of goods and services that support U.S. jobs,” said Secretary of Commerce Gary Locke. “Creating a global tourism promotion program to encourage international visitors to vacation in America will help spur economic growth and create more jobs.” (Department of Commerce, 2010)

Table 1: Variation of VWP Participation Countries over Years

year	# of Countries Entered VWP	Changes Highlights
1988	2	Japan, UK
1989	6	France, Germany, Italy, Netherlands, Sweden, Switzerland
1991	13	Andorra, Austria, Belgium, Denmark, Finland, Iceland, Liechtenstein, Luxembourg, Monaco, New Zealand, Norway, San Marino, Spain
1993	1	Brunei
1995	1	Ireland
1996	2	Argentina, Australia
1997	1	Slovenia
1999	3	Portugal, Singapore, Uruguay
2002	-2	Argentina, Uruguay
2008	8	Czech Republic, Estonia, Hungary, Latvia, Lithuania, Slovakia, South Korea and Malta
2010	1	Greece
<b>Total</b>	<b>36</b>	
<b>Road map</b>	<b>11</b>	<i>Croatia (2011), Bulgaria, Cyprus, Poland, Romania, Argentina, Brazil, Uruguay, Israel, Taiwan, Turkey</i>

*This table shows that over time 36 countries have successfully joined and stayed in the program. Source: U.S. Department of Commerce.*

The current debates of VWP extension to more countries are mainly around concerns of national security and illegal immigration caused by VWP status over-stayers. GAO, DHS and many other authorizations have completed evaluations on the program in terms of these concerns. However few studies focus on the economic benefit evidence to determine the economic impact the VWP has exerted on the US economy, nor did they provide satisfying result. This study adds to the literature by offering the substantial economic benefit analysis by introducing a difference-in-differences approach. The rest of the paper include a literature review, which discusses the literature on this economic impact of the VWP; data and methodology, which introduces the data source and methods this study uses; results, which presents the analytical results of the study; and concluding comments.

## LITERATURE REVIEW

Studies advocating expansion of the program mainly focus on the increased monetary benefits and the strengthened strategic diplomatic advantages the expanded program will bring to the U.S. In a recent report of the Council on Foreign Relations, Alden pointed out that “by limiting the program, the United States is missing out on considerable economic, political and security benefits”. (Alden, 2012) Alden especially mentioned that for the potential eligible counties on the VWP road map that are also demonstrating fast-growing economies, such as Argentina, Brazil and Taiwan, the United States is losing the competition for tourists to West Europe and the United Kingdom, where travel is made easier.

Researches have hypothesized and confirmed fact that the VWP will encourage travelers to the U.S. In regard of determination of this economic benefit, using data from Commerce and the Travel Industry Association of America, a GAO report finds that “in 2000, travelers from visa waiver countries spent an estimated \$39.6 billion in the United States, accounting for 57 percent of overseas tourist spending” and “average spending per traveler from visa waiver countries in 2000 was \$2,253” (GAO, 2002). GAO also points out that according to the World Travel and Tourism Council study, “visa waiver travelers’ direct and indirect spending within the United States added between \$75 billion and \$102 billion to the U.S. gross domestic product in 2000” (GAO, 2002). A work done by Discover America Partnership’s indicated that in 2008, foreign travelers spent more than \$100 billion in the United States and the VWP accounts for \$48 billion of the spent by foreign travelers in 2008 (Discover America Partnership, 2007).

One very important factor in this benefit analysis is the average spending per person during the stay in the United States for business and pleasure, which is often calculated by surveys. A report by the Heritage Foundation in 2009 consolidated other government data on international visitors' expenditure in detail, concluding that each visitor spends an average of 3,791 USD, three times of a domestic traveler (McNeill et al., 2009). According to more recent news released by the White House, Chinese and Brazilian tourists currently spend more than 6,000 USD and 5,000 USD respectively each, per trip. (The White House, 2012) However, the other very important factor - the number of tourist and business travelers to the U.S. as a result of the VWP has not been clearly calculated. It is insufficient for the above studies to claim the amount of travelers has been generated by the VWP unless separating the net effect of the VWP from the tourist and business flows that would happen without the existence of VWP. It is necessary to introduce a country not exposed to the treatment as a control group, because the difference-in-differences would remove the bias caused by secular trends. In terms of savings on administrative cost, GAO estimated that "if the program were eliminated, we estimated that the department's initial costs to process the additional workload would likely range between \$739 million and \$1.28 billion and that annual recurring costs would likely range between \$522 million and \$810 million." (GAO, 2002)

At individual level, in the absence of VWP, potential travelers would have to visit a U.S. consulate or embassy, which is usually not located in their city of residence, for a face-to-face interview for a visa. They even have to buy special calling card to phone the U.S. consulate to schedule the interview. In addition to this domestic traveling hassle, there is a non-refundable application fee of \$100-\$200. On the other hand, since the VWP participating countries will waive visa for the U.S. citizens to visit their land as well, in the absence of VWP, "Americans then might have to pay a visa fee of around \$100 for each country visited" (McNeill et al., 2009) in addition to the domestic traveling cost.

## DATA AND METHODS

This study calculates the economic benefit associated with VWP mainly in two ways: the net increased economic gain through VWP-encouraged tourist and business trips; saving in administrative cost for the U.S. government. The first part of the analysis uses non-immigrant admission data, which could be found in DHS immigration yearbook. The study selects one European country (Malta) and one Asian country (South Korea), both joined the VWP in 2008, and two countries that are not participating currently (Cyprus and Taiwan) but with relatively comparable traits (demographic, socio-economic advancement). Each pair is then considered as a quasi-experiment with a control group. I took two measurements to gauge the level of tourist/business trips. First is to use the percentage of tourists/business travelers over all kinds of non-immigrant travelers within the country. Second is to use the tourists/business travelers per thousand population within the country.

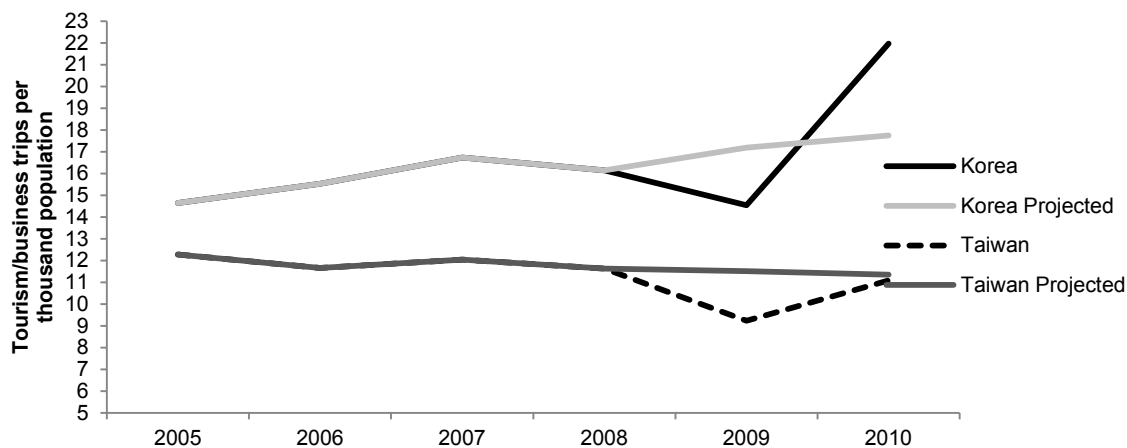
For each measurement, using 2005-2008 data values as pre-treatment period, I fit a linear regression line to project the 2009 and 2010 values; the differences between the projected values of 2010 and the real values of 2010 is measured. I finally subtract the difference between projected values from the difference between the real values to get the net effect of the VWP. Notice that cost at the individual level – both foreign country nationals and the U.S. citizens – is not considered in this study. The second part of the analysis is to calculate the saving in administration cost with VWP. I built the calculation on existing saving of cost evaluations by GAO, which is the so far the most systematic administration cost calculation that I could find. GAO estimated the total cost if VWP is eliminated in 2002. It is then translated to per interview rate, and converted to the 2010 context. The 2002 report contains the so far the most systematic administration cost calculation assuming the VWP is not in place. This cost without program equals the saving on administration due to the program (benefits).

## RESULTS

### Benefit Due to Increased Tourism

In order to calculate the economic benefit that brought by the VWP-boosted tourism, I need two factors: the net VWP-boosted business and tourist trips (that otherwise would not happen without the program), and the average spending per person during their stay in the United States. Since the average of visitor's expenditure in the U.S. each year fluctuates with economic cycles and is closely associated with the nation country's economic well-being, I choose to use the average spending amount of \$3,700 in order to have a conservative evaluation for 2010. Next, I conducted a quasi-experiment to determine the net effect of VWP in terms of how many tourist/business travels occur. Two pairs of countries, each including one VWP participating country and a non-participating country, are selected due to their similarity in geographic locations, demographic characteristics, and socio-economic development (GDP per capita): South Korea and Taiwan, Malta and Cyprus. Both South Korea and Malta joined the program during VWP 2008 extension. Both control group countries are currently on the road map and under decision of joining the program. The first measurement I take is the tourism and business trips per host country population. Using this parameter allows me to compute the absolute increased number of trips from each country.

Figure 1: Annual Tourism & Business Trips to The U.S.A. per Thousand Population

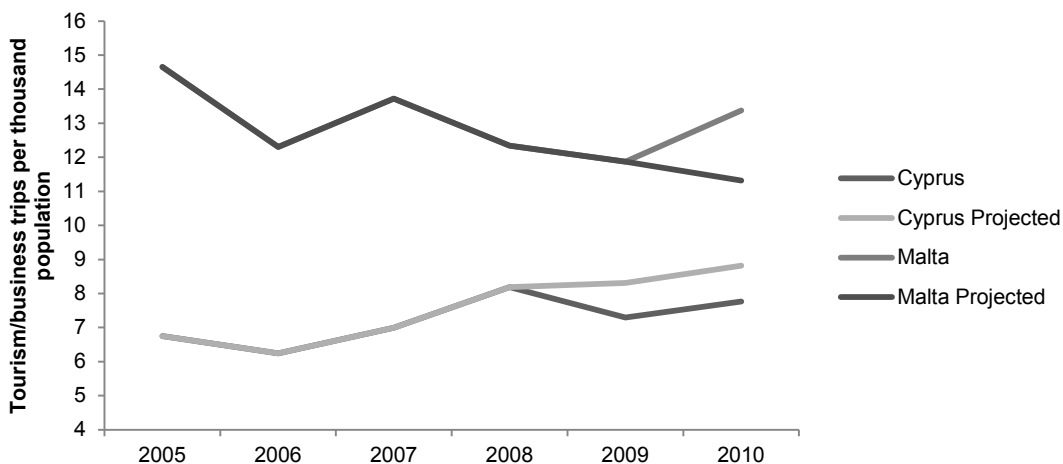


*This figure shows that after joining the VWP in 2008, South Korea has hosted a significantly faster growing in the tourism/business trips to the U.S. than both its own projection generated by its historical trend, and its non-participating country pair Taiwan. Specifically, the calculation of the "difference-in-difference" is:  $(Korea - Taiwan) - (Korea Projection - Taiwan Projection) = (22-11)-(18-11.5) = 4.5$  Data Source: U.S. Department of Homeland Security Yearbook of Immigration Statistics: 2005-2010, Non-Immigration Admission (<http://www.dhs.gov/files/statistics/immigration.shtm>).*

Figure 1 and Figure 2 show that for the two participating countries, the fact of joining VWP (in 2008) made the real values significantly larger than the forecasted value. More specifically, in South Korea in 2010, about 22 person/time per thousand population visited the U.S. through VWP, compared to 18 as projected if the VWP did not exist. In Taiwan, the real value and the projected value are in fact very close. The difference in differences is about 4.5 trips per thousand population. However, if we focus on the 2009 values, the difference in differences is quite small (in fact a negative 0.3) because both values dropped sharply from the previous year. This of course may be because that the program's effect was suppressed by the recession world-wide. It may also indicate that it takes more than one year for participating country's citizens to adjust to the program and take action to travel.

Figure 2 is a replication of Figure 1 with a European pair of countries. The result is very similar. In 2010, about 13 person/times visited the U.S. from Malta, compared to the projected value of 11, despite the recession. In Cyprus where people need to apply for a visa to travel to the U.S., about 8 person/times traveled to U.S., less than the projected value of 9, probably due to the shock of the recession. The difference in differences is about 3.1 trips per thousand population.

Figure 2: Annual Tourism and Business Trips to the U.S.A. per Thousand Population



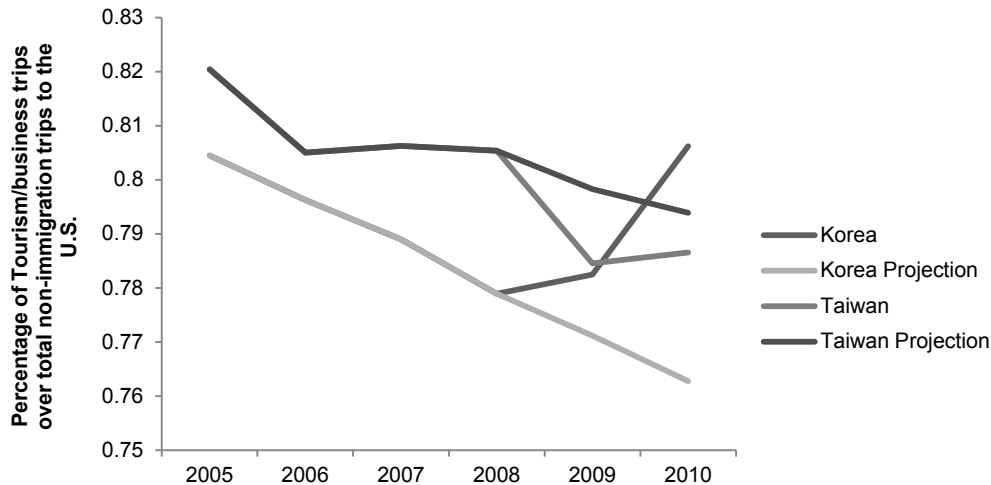
*This figure shows that Malta's joining the VWP in 2008 immediately stopped the decline in tourism/business travel in 2009, and made the trips exceed its projection based on historical trend. On the other hand, the non-participating country, Cyprus, hosted fewer tourists than its own projection. Specifically, the calculation of the "difference-in-difference" is  $(Malta - Cyprus) - (Malta\ Projection - Cyprus\ Projection) = (13.4 - 7.8) - (11.3 - 8.8) = 3.1$  Data Source: U.S. Department of Homeland Security Yearbook of Immigration Statistics: 2005-2010, Non-Immigration Admission (<http://www.dhs.gov/files/statistics/immigration.shtm>).*

When we examine the 2009 values, it is clear that joining VWP prevented Malta tourist/business trips number from dropping, while Cyprus has dropped sharply. Generated from both groups, in 2010, VWP increased about 3.1-4.5 trips per thousand population. It equals 219 million more trips from South Korea, and 1280 more trips from Malta. If each of the travelers spent \$3,700 in the U.S., the VWP directly brought the U.S. 814 billion through traveler expenditure (Table 2). The second measurement I take is the ratio of tourist/business trips over all kinds of non-immigrant trips of each year within the country. Taking this second measurement makes the results more robust. To use the whole non-immigrant (temporary travel) as a base can rule out the possible demographic differences between treatment group and the control group since the traveler population is supposed to be more homogenous than country population. Because the ratio of tourist/business traveler number over total nonimmigrant travelers is relatively stable each year for a selected country, this parameter also bears more sensitivity. Figure 3 and 4 show that both VWP member countries experienced an increase in percentage of tourist/business traveler over total nonimmigrant travelers (compared to projection values), while both non-member countries experienced a drop (compared to projection values). Intuitively, the VWP has successfully increased tourist/business trips compared to other kinds of nonimmigrant travelers. Quantitatively, both European and Asian groups show an increase of above 5 percent.

The hypothesis that VWP will increase tourist/business travelers from the participating countries is confirmed by the above analysis. More specifically, participating in VWP encouraged an additional of 219 million travelers from South Korea in 2010, and 1280 additional travelers from Malta. Or, participating in VWP encouraged a 5.07% increase in the percentage of tourist/business trips over total non-immigrant trips from South Korea, and a 5.61% increase in the percentage of tourist/business trips over total non-immigrant trips from Malta. If we were to generate this result to all the 36 VWP participating countries, which have a total population of about 600 million, the VWP is estimated to

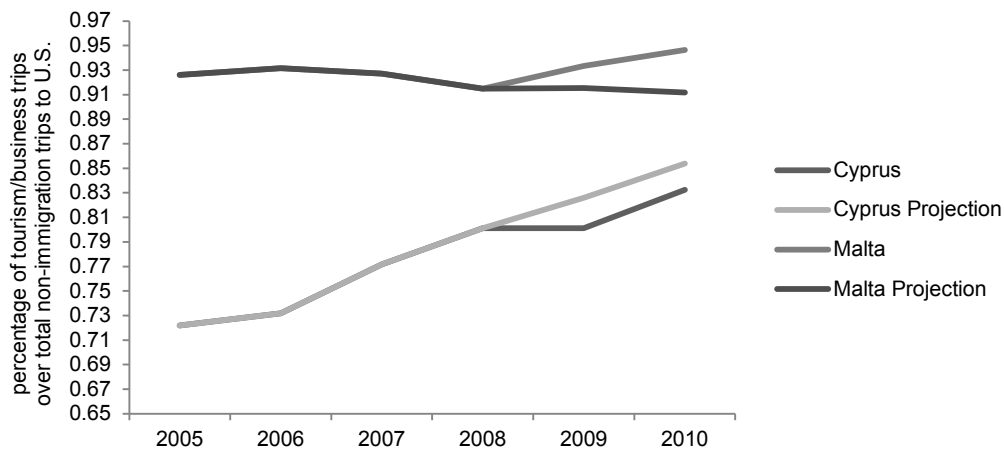
generate an additional 1.8 million to 2.7 million of tourist/business trips from its participating countries in 2010, which could be translated to \$6.9 billion to \$10 billion of direct spending in the U.S. by those visitors, assuming each visitor spent \$3,700 during their stay. This estimation is much moderate than the one from the previous estimating work.

Figure 3: Annual Rate of Tourism & Business Trips over Total Non-Immigration Trips to the U.S.A.



This figure shows that after joining the VWP in 2008, the share of tourism/business travelers among all non-immigration travelers in South Korea has increased significantly, though according to historical projection, the share should have declined sharply. For its counterpart Taiwan, the share of tourism/business travelers among all non-immigration travelers has declined probably due to the recession. The “difference-in-difference” is calculated as 5.07%. Data Source: U.S. Department of Homeland Security Yearbook of Immigration Statistics: 2005-2010, Non-Immigration Admission (<http://www.dhs.gov/files/statistics/immigration.shtm>).

Figure 4: Annual Rate of Tourism & Business Trips over Total Non-Immigration Trips to the U.S.A.



This figure shows that after joining the VWP in 2008, the share of tourism/business travelers among all non-immigration travelers in Malta has increased and exceeded its historical projection. For its counterpart, non-participating country Cyprus, the share of tourism/business travelers among all non-immigration travelers has not grown as quickly as projected. The “difference-in-difference” is calculated as 5.16%. Data Source: U.S. Department of Homeland Security Yearbook of Immigration Statistics: 2005-2010, Non-Immigration Admission (<http://www.dhs.gov/files/statistics/immigration.shtm>).

Table 2: VWP Net Effect Intepretation

2010 Difference in differences			
	Increased trips per thousand population	Increased Trips	Increased rate (in total non-immigrant admissions)
Malta	3.10	1,280	5.61%
Korea, South	4.49	219,221	5.07%

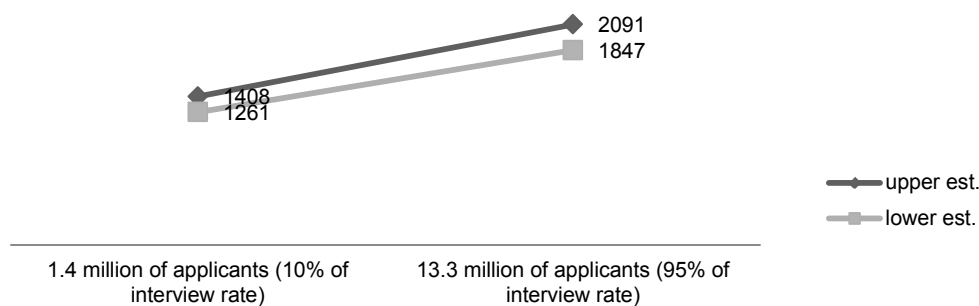
*This table consolidates the numerical results of difference-in-differences derived from Figure 1-4.*

**Benefit Due to Avoidance of Visa Control Administration**

In this part of the benefit analysis, I calculate the cost saving for the U.S. due to avoidance of visa control with VWP in place. In the absence of the program, potential travelers need to file an application to a U.S. consulate for a B visa (tourism – B1 and business B-2). This process is money and time consuming for both applicants and for the U.S. consulates. As I mentioned in the literature review, GAO (2002) estimated that if the VWP is to be eliminated, there would be a \$739 million to \$821 million initial cost and a \$522 to \$587 million recurring cost, under the scenario of low interview rate (10 percent); or a \$1.1 to \$1.3 billion initial cost and a \$723 to \$810 million of recurring cost, under the scenario of low interview rate (95 percent). The initial cost would be spent on hiring, training and moving new consular personnel; installing additional equipment to collect and store biometrics; and building or renovating facilities in all visa waivers posts. The recurrent cost will be covering consular personnel salaries, biometric hardware and software maintenance, facility leasing and maintenance and supplies. Built on GAO’s report, I take the sum of initial cost and the recurring cost respectively for low and high interview scenarios. The saving of administrative cost in 2002 therefore ranged from \$1.26 to \$1.41 billion under the low interview rate scenario, and \$1.85 to \$2.10 billion under the high interview rate scenario (Figure 5). In 2002, there were a total of 14 million tourist/business travelers who visited the U.S. under VWP.

(GAO) Using the low and high interview scenario’s interview rate, I compute the administrative cost (including initial and recurring costs) into per person cost of \$139 to \$157 for the low interview rate scenario, and \$901 to \$1005 for the high interview rate scenario, all in 2002 dollars. In 2010, when there were 18 million tourists and business travelers visited the U.S. under the VWP (DHS, 2011), if the VWP was not in place, the cost of interviewing these 18 million visitors will be ranged from 1.9 billion to 3.2 billion (Table 3).

Figure 5: Estimated State Department Annual Recurring Costs plus Initial Costs with and without VWP (in millions of 2002 USD)



*This figure consolidates GAO’s estimation results of recurring and initial cost without VWP. The left side is the low interview rate, and the right side is the high interview rate. Source: GAO analysis based on State’s Bureau of Consular Affairs and information from experts in the biometrics field. GAO, 2002, Implications of Eliminating the visa Waiver Program. Consolidated by author.*

Table 3: Computation of Administrative Cost without VWP in 2010

	total trips in 2010	tourist/business trips	interview percentage	interviews	per rate (2002 \$)	person	estimated 2010 dollars)	cost (in 2010)
Low interview	18,000,000		10%	1,800,000	901		1,953,708,000	
					1005		2,179,000,000	
High Interview			95%	17,100,000	137		2,821,300,000	
					157		3,233,290,000	

*This table shows the calculation of actual cost estimation in 2010: It translates GAO's estimation into cost per visa application, and then put it into 2010 context. However, notice a limitation of this method is that it is assuming that the trips happening with or without VWP remains the same, which is obviously questionable. Source: GAO, 2002; DHS immigration yearbook, 2011.*

## CONCLUSION

The goal of this paper is to add into the literature the economic benefit the VWP brings to the United States: The first part estimates the net effect of VWP in terms of encouraging tourist/business trips. The difference-in-difference method with two measurements not only confirmed that the VWP substantially increases tourist/business travelers from that country significantly, but also quantified the increased trips due to the program: participating in VWP encouraged an additional of 219 million travelers from South Korea in 2010, and 1280 additional travelers from Malta. Put into a broader context, this result indicates the VWP has encouraged an additional 1.8 million to 2.7 million of tourist/business trips from its participating countries, and has added to the U.S. \$6.9 billion to \$10 billion of direct spending by those foreign visitors in 2010. The second part of the analysis is built on the existing evaluations of administration cost by GAO, consolidates and converts the results into a current context. It concludes that in 2010, because the VWP was in place, the U.S. government has saved from 1.9 billion to 3.2 billion for the cost of interviewing visitors. These analyses, of course, rest on many assumptions. The most important one is how representative the two pairs of countries are, and how comparative the two countries in each pair are. Second how reliable the results are for other years. Put in other words, the results are time and country-sensitive. This piece could be viewed as an exploratory study for future research with panel data which include more countries and time periods. The economic benefit of the VWP also lies in many more perspectives than the two analyzed here. Individual benefits for U.S. citizens and participating countries citizens is a big piece that is missed here, also the derived benefit by creating of jobs and the multiplied benefits are goals for future studies. Caveats aside, the first part of the analysis corrected the overestimation that previous studies concluded; the second part updated the administrative cost study that GAO did many years ago into a more current context. Together, the results serve as a solid evidence of VWP economic argument, and contribute to its future expansion.

## REFERENCE

Alden, Edward. *If you extend the Visa Waiver Program, they will come – the Rewards of Open Travel*. Council on Foreign Relations. April 9, 2012 <http://www.foreignaffairs.com/articles/137390/edward-alden/if-you-extend-the-visa-waiver-program-they-will-come>

Department of Commerce, March 4, 2010 <http://www.commerce.gov/news/press-releases/2010/03/04/president-obama-signs-travel-promotion-act-2009-law>

Department of Homeland Security, *Immigration Yearbook*, 2011 <http://www.dhs.gov/files/statistics/publications/LPR10.shtm>

Department of the State, *Visa Waiver Program (VWP)*, 2012 [http://travel.state.gov/visa/temp/without/without\\_1990.html](http://travel.state.gov/visa/temp/without/without_1990.html)



Discover America Partnership. *A Blueprint to Discover America*, January 31, 2007.  
[http://www.tourismeconomics.com/docs/Blueprint\\_to\\_Discover\\_America.pdf](http://www.tourismeconomics.com/docs/Blueprint_to_Discover_America.pdf).

GAO, 2002, Implications of Eliminating the visa Waiver Program  
<http://www.gao.gov/new.items/d0338.pdf>

McNeill, Jena Baker, James Jay Carafano, James Dean, and Nathan Sales. *Backgrounder*. Washington, D.C.: Heritage Foundation, June 12, 2009. <http://www.heritage.org/research/reports/2009/06/visa-waiver-program-a-plan-to-build-on-success>.

The White House, We Can't Wait: President Obama Takes Actions to Increase Travel and Tourism in the United States. Jan 19, 2012. <http://www.whitehouse.gov/the-press-office/2012/01/19/we-can-t-wait-president-obama-takes-actions-increase-travel-and-tourism->

United States General Accounting Office. *Implications of Eliminating the Visa Waiver Program*. Washington, D.C.: United States General Accounting Office, November 2002.  
<http://www.gao.gov/new.items/d0338.pdf>.

Visa Waiver Program (VWP), U.S. Department of State,  
[http://www.travel.state.gov/visa/temp/without/without\\_1990.html#vwp](http://www.travel.state.gov/visa/temp/without/without_1990.html#vwp)

## BIOGRAPHY

Xiaochu Hu is doctoral student at the dissertation phase at School of Public Policy, George Mason University, with research concentrations in immigration policy and regional economic development. Ms. Hu is also an Economic Club of Washington, Philip Dearborn Doctoral Research Fellow, 2012-13. Her recent publications include *Scientists, Managers, and Tourists: The Changing Shape of European Migration to the United States* (Migration Policy Institute, July 2011, co-author), and *China's Young Rural-to-Urban Migrants: In Search of Fortune, Happiness, and Independence* (Migration Information Source, Jan, 2012). Ms. Hu can be reached via [xhu4@masonlive.gmu.edu](mailto:xhu4@masonlive.gmu.edu)

