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McMeasuring Diplomacy: Modeling Determinants of International Public Opinion Toward the United States

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McMeasuring Diplomacy: Modeling Determinants of International Public Opinion

Toward the United States

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Abstract

This paper is concerned with modeling the extent to which external factors affect political attitudes toward the United States. The data is concerned with how economic, governance, and cultural factors impact attitudes regarding the favorability of the United States in the eyes of the world, and testing the empirical implications of Thomas Friedman's Golden Arches Theory of Conflict Prevention.

The results suggest a strong negative relationship between a country being a Muslim majority country and the favorability of the United States in that country, a positive relationship between the perceived "Voice and Accountability" of a country and the favorability of the United States in that country. Although the study finds no relationship between trade in general and the favorability of the United States—the study does find that trade with domestically producing firms of the United States increases the favorability of the United States abroad.

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1. Introduction

In the 1999 book, *The Lexus and the Olive Tree*, Thomas Friedman wrote, “No two countries that both had McDonald’s had fought a war against each other since each got its McDonald’s” (Friedman 1999). This theory has since been overturned—the NATO bombing of Yugoslavia shortly after the book’s publication and the 2008 conflict between Russia and Georgia (among others) refuting the theory—but the Golden Arches Theory of Conflict Prevention implies an important relationship more general than the stipulated one between McDonald’s and conflict. The theory implies a relationship between the globalization and peace, between the interconnectivity of the global economy and the openness of society. This relationship—if true—has important implications for governments and policy makers as they try to foster positive, lasting relations amongst the nations of the world.

The goal of this paper is to develop an econometric model that tests the veracity of Friedman’s claims. Specifically, this paper is concerned with modeling the extent to which external factors affect political attitudes toward the United States. The data is concerned with how economic, governance, and cultural factors impact attitudes regarding the favorability of the United States in the eyes of the world, and testing the empirical implications of Thomas Friedman’s Golden Arches Theory of Conflict Prevention.

The remaining sections of the paper are organized as follows. Section 2 sets out the basic model estimated by the study. Section 3 gives an overview of the data. Section 4 presents and discusses the results the results. Section 5 offers some concluding remarks.

2. The Model

This study estimates a basic linear regression model for the sample data in the functional form:

$$Y_i = bX + e_i \quad (1)$$

Where Y_i is an estimate of the population value as a function of a deterministic element or set, bX , and a stochastic element e_i . For the sake of this study, the data is gathered in a cross-sectional format, the exact make-up of these cross-sections will be discussed in section 3 of the paper.

The general relationship estimated by the model in this study is:

$$IF_i = b_i(I_{ki}, E_{ki}, G_{ki}, C_{ki}) + e_i \quad (2)$$

Where: IF_i = the percent of the population that holds a favorable view of the United States.

b_i = the slope coefficient registering the impact of each of the deterministic elements on the dependent variable IF_i .

I_{ki} = a deterministic element accounting for income within a given cross-section.

E_{ki} = a set of deterministic elements encompassing measures of the economy for a given cross-section. These include specifically an income measure and a measure of economic openness.

G_{ki} = a set of deterministic elements encompassing measures of governance for a given cross-section.

C_{ki} = a set of deterministic elements encompassing measures of culture for a given cross-section. These include specifically an element addressing religion and one addressing the proliferation of foreign culture.

e_i = a stochastic or random element.

The theoretical structure of the model asserts a relationship between the international relations attitude—public opinion—toward a certain country (in this model the United States), and the economy, government, and culture of the nation expressing the opinion. Building on the insight from Friedman (1999): different economic, government, or cultural make-ups are seen as significant determinants of societal consciousness, and thus—potential shifters of public opinion regarding specific issues. In this case, the issue at hand is the favorability of a particular nation in the eyes of individuals of another given nation. As the fundamental building blocks of a nation—culture, economy, and government—increase their openness, one expects the ideological make-up will follow suit.

When accounting for each of the specific deterministic elements within the categorical sub-headings, we estimate the following as a baseline model for the study:

$$Favorability_i = b_0 + b_1Econ_i + b_2Income + b_3Religion_i + b_4Voice_i + e_i \quad (3)$$

Increases in economic openness and income are expected to correlate positively with favorability. Religion—as it is coded in the model (explained in Section 3)—is expected to have a negative coefficient. Finally, regarding governance, as nations become

more democratic the expected relationship between governance and United States' favorability is positive.

3. Data Overview

The initial steps to this study were to identify an appropriate means for measuring international relations attitudes and to obtain relevant data to function as economic, governance, and cultural inputs. The following portions of Section 3 contain a description of each variable included in the baseline model, as well as those included in later model iterations, and how each data series is calculated. The table in Appendix A gives a statistical summary for each of the variables.

The variable being assessed by the model, international favorability of the United States, is obtained from the Pew Research Center's 2013 Global Attitudes Survey. The specific input included in this study is the percent of individuals surveyed from a given nation whom indicated they held a favorable view of the United States. The dependent variable *Favorability* thus measures the stated preference of the randomly sampled respondents. The 2013 Global Attitudes Survey includes responses from individuals in 39 countries. For the sake of this study, the results from surveys in India and Lithuania done in 2012 and 2011 are included. Year to year variation in *Favorability* is little, indicating that the recent past functions as an accurate predictor of current *Favorability*. With the inclusion of these last two cross-sections, the total number of sections included in the study totals at 41, 39 from the 2013 study, and two from studies done in previous years.

The deterministic elements included in the baseline model account for six primary attributes: two economic, two cultural, and one related to governance. In addition to those

included in the baseline model, the study also includes additional elements used to vary the baseline model. These additional elements include several different metrics for economic openness. Each of the deterministic elements is calculated for 2011.

3.1 Economic Attributes

The two economic attributes included in the baseline model are GDP per-capita and measure of economic openness, specifically net foreign direct investment per-capita (BoP, Current US\$).

GDP per-capita is included as the variable *GDP_PC*. It is calculated as the gross domestic product divided by all resident producers in the economy plus any product taxes and minus subsidies not included in the value of the products. It is calculated in Current US\$, based on World Bank national accounts data, and OECD National Accounts data files.

Net foreign direct investment (FDI) per-capita (BoP, Current US\$) is included as *Inv_Pc* in the baseline model. Foreign investment is as an important relational test in the model developed in this study. If the implications of Friedman's (1999) theory are true, there should be a positive relationship between foreign investment and the openness of society to the rest of the world (including the United States). Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. The data is sourced from the World Bank's World Development Indicators and the International Monetary Fund's Balance of Payments Statistics Yearbook and data files.

As modifications on the baseline model are done, several other variables within the deterministic category, E_{ki} , are substituted for the initial model configuration. Amongst these are: the number of McDonald's restaurants in a country, trade as a percent of GDP, and per-capita net foreign direct investment inflows (BoP, Current US\$).

The variable *Restaurants* accounts for the total number of McDonald's restaurants in a given nation. The data is obtained from the McDonald's Corporation's self-published public financial information, through their 2012 corporate financial release made available to stockholders and the public.

The author notes that it is indeed possible that the number of McDonald's in a given nation be interpreted as a cultural variable as well as an economic variable. The number of McDonald's restaurants in a nation is as much a measure of the proliferation of United States culture as it is a measure of the openness of that nation to globalization (akin to foreign direct investment). Because of the ambiguous nature of this variable in regards to its status as "economic" or "cultural," the author acknowledges a certain degree of arbitrariness in how the variable is interpreted. The reader may be justified in interpreting the impact of the number of McDonald's restaurants on *Favorability* as either an economic or cultural impact; it is—in a sense—an assessment of both. For the sake of this model, it is interpreted specifically as the openness of a nation to trade with the economy of another nation in the particular—namely, the United States.

Trade, as a percent of GDP, is measured by the variable *Trade*. It is the sum of exports and imports of goods and services measured as a share of gross domestic product. It is calculated from the World Bank national accounts data, and OECD National Accounts data files.

Foreign direct investment per-capita inflows (BoP, Current US\$) is counted in the variable *Inf_PC*. Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. In this case only the inflows are accounted for—as opposed to the net of inflows and outflows. The data is sourced from the World Bank’s World Development Indicators and the International Monetary Fund’s Balance of Payments Statistics Yearbook and data files.

3.2 *Cultural Attributes*

In this model religion is determined to be the defining character of a given nations cultural make-up. Whether or not a country is a Muslim majority is accounted for in the variable *Religion*. *Religion* is coded as a dummy variable taking the value of 1 if the adherence rate to Islam is at least fifty percent of the total population or greater, and a value of 0 if the adherence rate is less than fifty percent.

3.3 *Governance Attributes*

Governance is measured via data obtained from the World Bank’s World Governance Indicators (WGI) Database—specifically this model looks to the metric “Voice and Accountability” from the WGI.

“Voice and Accountability,” as measured in the World Governance Indicators is coded as the variable *Voice* in this study. The WGI are a measure of public perceptions recorded through revealed preference surveys obtained via random sampling. *Voice* specifically measures “perceptions of the extent to which a country’s citizens are able to

participate in selecting their government, as well as freedom of expression, association, and media” (World Governance Indicators 2013). Each of the WGI are scored in the units of a standard normal distribution, taking values from -2.5 to 2.5. The way *Voice* impacts *Favorability* is interpreted in this study as a proxy for how—if at all—being a more democratic society (as measured by the WGI “Voice and Accountability”) affects that society’s perception of the United States.

4. Results

4.1 Linear OLS Model

Columns 1 through 5 contain the parameter estimates for the linear ordinary least squares (OLS) model. Column 1 contains the estimates for the base model. Columns 2-5 contain the variations on the base model used to test for unique impacts of specific variables measuring economic openness. Column 5 tests for the impact of two variables of economic openness, as opposed to the singular openness variable model tested in Columns 1-4. The last variation on the base model is designed to test for differences in impact between bilateral trade and complete multilateral trade.

The first thing to note is the relative robustness of the variables *Religion* and *Voice* across all variations of the model. Each of these variables is statistically significant at the 5% level in every model except the base model, where *Voice* is significant at the 10% level. In each case both *Voice* and *Religion* are significant in an impactful mathematical sense while maintaining statistical significance.

In this context, *Religion* functions as a differential slope intercept dummy. By taking the value of 1 there is a resulting decline in the favorability of a given cross-

Table I. Parameter Estimates (std. error of parameters in parenthesis).

Dependent: <i>Favorability</i>	(1)	(2)	(3)	(4)	(5)
<i>Inv_PC</i>	8.16368e-05 (0.0054)	—	—	—	—
<i>GDP_PC</i>	-0.00031 (000023)	-0.00043 (0.00021)*	-0.000278 (0.00023)	-0.000411 (0.000229)*	-0.000594 (0.000257)**
<i>Religion</i>	-21.0830 (6.95)***	-20.6753 (8.14814)**	-21.6211 (8.42402)**	-21.4823 (8.22275)**	-21.1679 (8.26419)**
<i>Voice</i>	10.5 (5.19)*	11.4404 (3.905)***	9.78396 (4.48264)**	10.4828 (3.84695)***	11.577 (4.07272)***
<i>Restaurants</i>	—	0.00148095 (0.00049)**	—	—	0.00175447 (0.00049)***
<i>Trade</i>	—	—	0.0396146 (0.0836188)	—	—
<i>Inf_PC</i>	—	—	—	0.00428370 (0.00433)	0.0062 (0.0047)
R^2	0.390195	0.412447	0.394059	0.397947	0.427701
<i>Adjusted R²</i>	0.322439	0.347163	0.326732	0.331052	0.345945
<i>F-Stat</i> (P-value)	5.758828 (0.001091)	11.35637 (4.60e-06)	5.438193 (0.001571)	5.652499 (0.001230)	9.830274 (6.21e-06)
<i>S.E. of Regression</i>	16.05945	15.76373	16.00850	15.95706	15.77844

* Denotes significance at the 10% level, ** at the 5% level, and *** the 1% level.

-section by an average of 21 percentage points. The impact of being a Muslim majority country is thus large in its political economy significance in its role as a determining factor of perceptions of the United States abroad. To some extent—given the state of Middle-Eastern politics and the imperialistic perception of the United States within

Islam—this relationship was expected. However, the extent of the impact is somewhat surprising.

The impact of *Voice* is apparent across all variations of the model. A one-unit increase in the value of *Voice* results in an increase of approximately 10 percentage points on *Favorability*. This relationship was somewhat expected. As countries become more open and democratic a two-fold process occurs: the increased access and availability of information increases the ideological tolerance of the given society, and as those nations become more democratic (read: look more like the United States) the United States tends to treat those nations better in the international relations process. As a result, it makes sense that the favorability of the United States would increase in a given country in response to increases in *Voice*.

Second—following the impact of *Voice* and *Religion*—one must note that *GDP_PC* is significant at the 10 and 5 percent levels in certain models. The negative coefficient on per-capita GDP is surprising, however—*GDP_PC* is the least robust of all variables attaining any level of significance within the model. The impact of the negative relationship between *GDP_PC* and *Favorability* is minimal in absolute terms—approximately 4 percentage points at the mean, and 2.6 at the median, respectively. There may be theoretical justification for this negative relationship—however, the impact (in both statistical and absolute terms) is so small that it is possibly a limitation of the data.

The most significant findings of the study come from comparing the results given in Columns 1, 2, 4, and 5. The results of these models suggest that while international interconnectivity in general does not impact the favorability of the United States, that

trade in the domestically produced commodities of the United States does have an impact on the overall favorability of the United States abroad.

Neither *Inv_PC* nor *Inf_PC* establish a relevant level of statistical significance toward *Favorability* in the models that they are included. In both cases where *Restaurants* is substituted in the deterministic set, E_{ki} , the overall robustness of the model increases substantially—indicated by the increased value of the *F-Statistic*, R^2 and adjusted R^2 . *Restaurants* is significant at the 5% and 1% level in Columns 2 and 5 respectively. When *Inf_PC* and *Restaurants* are simultaneously included in Column 5—thus isolating the impact of *Restaurants* on *Favorability*—it is significant at the 1% level.

The mathematical impact of *Restaurants* on *Favorability* is relatively small—approximately a 1.2 percentage point increase at the mean—the theoretical impact however, is large. As noted earlier, there is no significant impact of general measurements of international economic activity (*Inv_PC*, *Inf_PC*, and *Trade* being all statistically insignificant) on *Favorability*. The impact of trade only becomes apparent when a specific firm or a good produced by a specific firm is isolated, as is the case with McDonald's and McDonald's franchises. Given a specific firm, the results suggest that although trade in general does not impact the attitudes of individuals toward a certain country, trade with a domestically producing firm of that country does impact these attitudes—and in a positive way. This makes sense. Some nations may trade in high volume, but have little in the way of positive relations with the United States.

In light of this theoretical framework, the small coefficient on *Restaurants* makes sense. As McDonald's franchises are one of many goods produced by the United States, they are therefore only accounting for a partial impact that total trade in goods produced

by the United States has on the favorability of the United States abroad. The theoretical view put forward by Friedman (1999) is thus at least partially confirmed: countries that trade in like commodities tend to be more amicable with one another—specifically, trade in a good produced by a country increases the favorability of that country abroad.

5. Conclusion

In drawing the study to a close we find three significant conclusions to be drawn from the models presented. First, we find a strong negative relationship between a country's status as a Muslim majority country and the favorability of the United States in that country. The qualitative character of this relationship is expected in the current geopolitical climate, however the quantitative weight is surprising. Given the likely relationship between religion and regional differences, a regional variable was left out of the model in favor of the *Religion* variable. Second, we find a positive relationship between the "Voice and Accountability" of a country, as measured by the World Bank World Governance Indicators, and the favorability of the United States in this country. Finally, we find that although there is no relationship between the favorability of the United States and trade in general, there is a positive relationship between trade in a United States with a domestically producing United States firm and the favorability of the United States.

The final of the three conclusions is the most compelling. Although more testing will be useful in the process of obtaining a fuller picture, the results presented in this study establish the beginnings of an empirical foundation of confirmation for the intuition behind Friedman's (1999) Golden Arches Theory of Conflict Prevention. Testing of

larger baskets of goods from the United States, different US firms, as well as the relationship between goods produced in other countries and the international favorability of those countries will provide additional confirmation to the results set forth here. In addition, expanding the sample size to include more cross-sections as they become available, and the inclusion of additional parameters such as education, give room for possible extensions as the determinants of international relations attitudes continue to be explored.

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Appendix A

Table A.1 Summary Statistics

Variable:	Mean	Median	Min	Max
<i>Inv_PC</i>	-63.125	-47.286	-2255.6	890.89
<i>GDP_PC</i>	16616	10605	478.62	62003
<i>Religion</i>	0.21951	0	0	1

<i>Voice</i>	0.23118	0.31059	-1.5776	1.4742
<i>Restaurants</i>	749.24	177	0	14157
<i>Trade</i>	72.522	64.395	24.512	167.22
<i>Inf_PC</i>	389.22	208.37	-6.0799	2955.3
<i>Favorability</i>	59.244	64	11	85

Inv_PC – Per-capita net foreign direct investment.

GDP_PC – Per-capita GDP (Current US\$).

Religion – Dummy for “Muslim majority Country.”

Restaurants – Total number of McDonal’s Restaurants.

Trade – Trade, % of GDP.

Inf_PC – Per-capita foreign direct investment inflows.

Favorability – percent of individuals surveyed from a given nation whom indicated they held a favorable view of the United States.