Soft Power and Exports

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This paper seeks to help establish a stylized fact: a country's exports rise when its leadership is approved by other countries. I show this using a standard gravity model of bilateral exports, a panel of data from 2006 through 2017, and an annual Gallup survey which asks people in up to 157 countries whether they approve of the job performance of the leadership of China, Germany, Russia, the United Kingdom and the United States. Holding other things constant, a country's exports are higher if its leadership is approved by the importer; 'soft power' promotes exports. The soft power effect is statistically and economically significant; a one percent increase in leadership approval raises exports by around two-thirds of a percent. This effect is reasonably robust, and different measures of soft power deliver similar results. I conservatively estimate that the >20 percentage point decline in foreign approval of American leadership between 2016 (the final year of Obama's presidency) and 2017 (Trump's first year) lowered American exports by at least $3 billion.

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1. Introduction and Motivation

The objective of this paper is modest: it tries to help establish an empirical linkage between the popularity of a country's leadership and international trade flows. Using standard techniques, I find that countries whose leadership is approved abroad tend to sell more exports, holding all else equal. More generally, I hope to demonstrate that 'soft power' – the ability of one country to attract or persuade citizens in another – is a significant determinant of export demand; countries that are more favorably viewed by foreigners tend to sell more.

2. Methodology and Gravity Data

I am interested in whether countries are affected in any tangible way by fluctuations in soft power. In particular, I test whether changes in foreign perceptions of soft power affect export sales, all else equal. In doing so, I hope to establish a new stylized fact linking trade to soft power.

I use a standard gravity model of international trade to account for other influences on bilateral exports besides soft power. In particular, I pursue "theory-consistent estimation" of the gravity equation, closely following the suggestions in the authoritative survey by Head and Mayer (2014). I focus on their "LSDV" (Least Squares with time-varying country Dummy Variables) technique which they show works well in many situations. I estimate:

$$\ln(X_{ijt}) = \gamma SOFTPOWER_{ijt} + \beta_1 \ln(D_{ij}) + \beta_2 Lang_{ij} + \beta_3 Cont_{ij} + \beta_4 RTA_{ijt} + \beta_5 Colony_{ij}$$

$$+ \{\lambda_{it}\} + \{\psi_{jt}\} + \varepsilon_{ijt} \tag{1}$$

where:

- $\ln(X_{ijt})$ denotes the natural logarithm of the nominal value of bilateral exports from country i to country j at time t, measured as the average of FOB exports from i to j and CIF imports into j from i,

- $SOFTPOWER_{ijt}$ denotes a bilateral measure of the soft power that i is perceived to have in country j at time t,

- D is the great-circle distance between i and j,

- Lang is a binary variable which is unity if i and j have a common language and zero otherwise,

- Cont is unity if i and j share a land border and zero otherwise,

- RTA is unity if i and j belong to the same regional trade agreement and zero otherwise,

- Colony is unity if i colonized j or *vice versa* and zero otherwise,

- β is a vector of nuisance coefficients,

- $\{\lambda_{it}\}$ is a complete set of time-varying exporter binary variable fixed effects,

- $\{\psi_{jt}\}$ is a complete set of time-varying importer binary variable fixed effects, and

- ε_{ij} represents the myriad other influences on exports, assumed to be well behaved.

The coefficient of interest is γ, the effect (on bilateral exports) of the exporter's soft power over the importer, *ceteris paribus*. I estimate this equation with least squares, using standard errors robust to clustering by dyadic (ij) pair.

In practice, most of the variation in exports is explained by the 'monadic' country-time fixed effects (one set each for the exporter and importer), which control a host of other influences on bilateral exports. For instance, any general short-term effect on American sales

arising from the 2017 ascendance of President Trump is accounted for by the 2017 American exporter fixed effect; similarly, any effect on Egyptian imports arising from the 2011 Arab Spring is taken out by the 2011 Egyptian importer fixed effect. Anything that is specific and common to a country and a year – such as the size of its economy, population, culture, policy uncertainty, leadership, or military spending, for either the exporter or the importer – is accounted for by the fixed effects. Any effect of *bilateral* soft power on exports is estimated conditional on – and above and beyond – both these fixed effects, and the other determinants in equation (1). This is a demanding requirement.

Gravity Data

I rely on annual trade data drawn from the *Direction of Trade* data set assembled by the International Monetary Fund. The data set covers bilateral trade between over 200 IMF country codes between 1948 and 2017.[1] Bilateral trade on FOB exports and CIF imports is recorded in U.S. dollars. To this, I add a number of dyadic variables necessary to estimate the gravity model, including distance, the presence of a common land border and language, colonial history, and date of independence (these are taken from the CIA's *World Factbook*). I obtain data from the World Trade Organization to create an indicator of regional trade agreements, and include: EEC EC/EU; US-Israel FTA; NAFTA; CARICOM; PATCRA; ANZCERTA; CACM, Mercosur, COMESA, and more.

3. Soft Power Data: the Gallup Leadership Approval Poll

The innovation in equation (1) is a result of adding a measure of soft power to an otherwise conventional empirical model of export determination. I am particularly interested in whether a country whose leadership is considered appealing by potential importers experiences systematically higher exports than countries whose leadership is repellent, *ceteris paribus* (using the gravity model to hold other things constant). As my primary measure of soft power, I use survey results from the Gallup World Poll.[2]

Gallup began to ask questions about approval of national leadership in 2006. Each year since, Gallup has asked about a thousand survey participants in each of over a hundred countries a series of questions "Do you approve or disapprove of the job performance of the leadership of _____?" The World Poll has always asked about the leadership of China, Germany, Russia, and the United States; the UK was included through 2012.[3] In all, Gallup provides annual percentages of approval and disapproval for the leadership of five foreign countries (exporters, in this study) by participants in up to 157 countries (importers) for twelve years, 2006-17. Appendix Table A1 provides a brief summary of the range of the Gallup data, Appendix Table A2 provides some examples of recent American data, and Appendix Table A3 provides lists of the countries included in the Gallup surveys. There are a total of 6,411 Gallup observations available for the percentages of participants approving and disapproving of the leadership of foreign countries. I usually transform these percentages by natural logarithms; I

create net fractional approval by subtracting disapproval from approval, measured as a fraction (not a percentage, so that 100% approval/disapproval corresponds to 1.0/-1.0).

Gallup's question concerns whether survey respondents in one country approve (or not) of the leadership in another. As such, I consider it to be a manifestation of "soft power", although the interpretation is not strictly necessary for this study. Soft power is a term first used by Joseph Nye (1990) that describes the ability of a country to do what it wants by means of persuasion rather than means of force; Nye (2004) provides more detail. Hard power is the ability to coerce, and grows out of a country's military or economic might; soft power arises from the attractiveness of a country's culture, political ideals, and policies. Nye considers hard power to stem from a country's population, resources, economy, military, and the like. By way of contrast "Soft power is … the ability to attract, [since] attraction often leads to acquiescence … soft power uses a different type of currency (not force, not money) to engender cooperation – an attraction to shared values …" (Nye, 2004, pp 6-7).[4]

The Gallup measure seems like an interesting measure to consider in modelling the role of soft power in export determination, for a number of reasons. First, surveys seem like a potentially good way to measure one manifestation of soft power, as argued explicitly by Nye. Further, the Gallup poll is bilateral (Canadians have a different perception of American leadership than do Mexicans), allowing for estimation within a conventional gravity framework.[5] The measure is available for a number of years, allowing panel data analysis which uses variation across country-dyads and time. I show below that the Gallup measure moves quickly over time, faster than plausible variations in hard power. Finally, the very wording of

the Gallup survey is appealing during an era of demagoguery, precisely because it focuses on foreign approval of a country's leadership.

There is little reason to believe that the Gallup measure, or indeed any measure of soft power, will have a substantive effect on trade. To the best of my knowledge there is no theoretical literature of relevance, and the only empirical evidence consists of previous work by myself (Rose, 2016). Thus this exercise is intended to be exploratory in nature; in an unabashedly empirical manner, I pursue an intuitive idea namely that the import decisions of consumers and businesses may be affected by the popularity of the exporters' leadership.

Other Measures of Soft Power

The Gallup survey is by no means a perfect indicator of soft power. For one thing, it does not distinguish explicitly between hard (military or economic) and soft power.[6] The data coverage is limited in span, especially in the facts that respondents are only asked about a handful of foreign (exporter) countries for a limited number of years. Finally, Gallup asks about whether participants in country j approve of the job performance of the *leadership* of country i, which is different from the soft power ability of i to persuade, coerce, or co-opt citizens in country j to cooperate.

Accordingly, as robustness checks, I use two other bilateral measures of soft power. The BBC conducts a survey through GlobeScan which asks participants in up to 46 countries at irregular intervals between 2006 and 2017 whether they think that each of up to 17 other countries "are having a mainly positive or negative influence in the world?"[7] The Pew Research Center asks participants in up to 64 countries whether they "have a very favorable, somewhat

favorable, somewhat unfavorable, or very unfavorable opinion" of up to 27 countries between 2002 and 2017 (again, with gaps).[8] All three measures of soft power (Gallup, BBC/GlobeScan, and Pew) are summarized in Appendix Table A1. Scatterplots of all three measures across a variety of dimensions are provided in Appendix Figure A1; it is clear that the different measures are highly correlated.

An Informal Look at the Gallup Data

Figure 1 provides a dozen histograms of net leadership approval (approval – disapproval, expressed in fractions). Histograms of net approval are provided for each of the four exporter countries continuously in the sample (China, Germany, Russia, and the United States) at the beginning, middle and end of the sample period (2006, 2012, and 2017). Since Gallup asks respondents in over a hundred other countries, there is plenty of dispersion; the histograms in Figure 1 treat all countries similarly, in that responses are not weighted by population, income, or anything else.

The histograms provide at least three straightforward messages. First, Germany's leadership is both more widely and consistently approved than that of other countries. Second, approval of the leadership of China, Germany, and Russia seems reasonably persistent over time. Third, approval of American leadership has swung dramatically; it improved substantially between 2006 and 2012, and declined markedly between 2012 and 2017.

The popularity of the Obama presidency *outside the United States* appears clearly in Figure 1, and merits further exploration. Obama was a popular president, especially by way of comparison with both his predecessor (George W. Bush) and his successor (Donald Trump).

This is shown clearly in Figure 2, which presents average views of non-Americans about American leadership between 2006 and 2017. In the panel at the left, the job approval rating, averaged (without weights) across all other countries is plotted. Job approval of American leadership jumped from less than 40% under Bush in 2008 to over 50% under Obama in 2009; similarly, it declined by over ten percentage points when Trump succeeded Obama in 2017. Consistently, average foreign disapproval of American leadership fell sharply with Obama's 2009 accession, before rising sharply in 2017, as shown in the middle panel.[9] The net approval rating on the right shows the same big swings in the popularity abroad of American presidents. It is also worth noting that Trump's unpopularity outside the United States is similar to that of the nadir of George W. Bush.

A Closer Look at Variation Across Time and Space

Since Gallup has surveyed people in over 150 countries about their views of American leadership, the *average* views in Figure 2 conceal considerable heterogeneity (also apparent in Figure 1). This is presented more clearly in Figure 3, an analogue to Figure 2 that presents annual box plots of American leadership approval rather than simple averages. Consider the box plot at the extreme left of the left-most panel, which presents information concerning American job *approval* in 2006 as judged by respondents in well over a hundred countries. The box extends from the 25th to 75th percentiles of approval, with the median marked by a horizontal bar. The whiskers extend out to the "adjacent values," defined as the most extreme values within 150% of the interquartile range of the nearest quartile; outliers are individually marked. Box plots for subsequent years are presented to the right; the middle and right panels are analogues for disapproval and net fractional approval of the job performance of the

American leadership.

The box plots of Figure 3 are wide, indicating considerable cross-country dispersion in American leadership (dis-) approval. While the central tendencies mirror the averages portrayed in Figure 2, the most striking aspect of the box plots is their spread. Even Obama's relatively tight job disapproval ratings are marked by outliers; foreign disapproval and net approval of Republican presidents is particularly high. For instance, while Trump's median (and average) job performance disapproval across other countries was 42% in 2017, a quarter of countries put it at less than 25% while a quarter had at least 60% disapproval. This dispersion across countries might, of course, be noise. But it also opens up the possibility that this variation might be systematically linked to exports, the focus of this paper.

Figures 1-3 treat all countries as equal in importance. But, from a domestic perspective some countries are more important than others, because they are large, rich, or close. Accordingly, I now compare Gallup approval and disapproval over two different periods of time (the Obama and Trump presidencies), but taking into account country size.

Consider the top-left panel of Figure 4. This scatters foreign job approval ratings of American leadership averaged over 2009-16 (Obama's presidency, on the y-axis) against the analogue for 2017 (the data available for Trump's presidency, on the x-axis). The areas of the circles that portray individual country responses are proportional to (American) exports to that country. A 45° line (with slope of one) is provided for guidance; the data lie mostly above this line, indicating that countries tended to approve of Obama's job performance more than Trump's. Importantly, large American export destinations (observations with large circles) tend

to be towards the top-left of the graph; these countries are not only important American export markets but approve little of Trump, especially compared to Obama. Similarly the top-right panel of Figure 4 portrays foreign job-*disapproval* ratings of American leadership. The fact that most of the observations lie in the bottom-right of the graph indicate that many American export destinations, especially the important ones, disapprove strongly of Trump's leadership, though they disapproved little of Obama.

The drop in foreign approval for leadership in 2017 compared with the eight previous years is a phenomenon unique to the United States. This is illustrated in the bottom panels of Figure 4, which are in every way analogous to the upper panels but portray German instead of American data (Germany approval/disapproval/export data are substituted for American). Foreigners, especially those which are big German export markets, approve more/disapprove less of German leadership, as shown by the fact that the data are disproportionately in the top-right/lower-left area of the lower-left/lower-right graphs. Perhaps more striking is the fact that the data are approximately spread along the 45° line; foreign perceptions of German leadership have not systematically changed. Figure 5 shows that essentially the same is true of China and Russia. Succinctly, only foreign perceptions of the job performance of *American* leadership changed in 2017.

While the recent sharp drop in foreign approval of American leadership has no counterpart in other countries, it has a precedent in time. Figure 6 shows that Trump's low approval (and high disapproval) ratings are similar to those experienced by George Bush in 2006-08 (for comparison, the German analogues are presented immediately below). The fact that there is precedent for 2017 levels of American presidential (dis-) approval is valuable from

a statistical viewpoint, since it implies that the recent American data are not outliers but instead lie within the standard range of variation.

Thus far, the Gallup data have provided few surprises. But while the intuitive patterns in the data are reassuring, there is little reason to presume that there is any quantifiable link between exports and any measure of soft power. That is especially true since other export determinants are usually well-handled in practice by the gravity equation. I now turn to the establishment of this link.

4. A More Rigorous Approach

I now estimate equation (1), using the data and techniques set out above.

Table 1 provides descriptive statistics for the regressand (log exports), the gravity regressors (log distance and dummies for common language/border/colonial relationship/regional trade agreement), and the Gallup approval polls. At the right-hand side of the table, I also provide simple bivariate correlations with two key variables: a) the regressand, log exports; and b) the key regressor, the net fractional approval of leadership job performance (Gallup approval minus disapproval). It is interesting to note that exports are only modestly correlated in the sample with Gallup approval, and in any case this correlation is *negative* (so that higher Gallup approval corresponds weakly with *lower* exports). While the Gallup approval, disapproval and net approval ratings are (reassuringly) strongly correlated with each other, approval is only modestly correlated with the gravity regressors, allaying fears of multicollinearity.

<u>Baseline Results</u>

Benchmark estimates of equation (1) are provided in Table 2. In the column at the extreme left, the standard gravity model is estimated without any effect of soft power (i.e., setting $\gamma=0$). The coefficients are sensible; countries that are farther apart trade less with each other, while countries trade more if they share a common language, land border, regional trade agreement or colonial relationship. These effects are all economically and statistically significant, with magnitudes similar to those in the literature (Head and Mayer, 2014). The equations also fit well, explaining over four-fifths of the (chiefly cross-sectional) variation in exports.[10] The RMSE of the equation is 1.09 which compares well with the standard deviation of the regressand, 2.62. All this is reassuring, since it implies that most variation in exports is already well and sensibly explained by the underlying gravity model; the threshold for any additional export determinant is high. And since the model is familiar, any additional effect of soft power is not built on an edifice of sand.

The columns in the remainder of Table 2 add the three Gallup measures of leadership job performance – approval, disapproval, and net approval – one by one to equation (1). The effect of log approval is substantial; a one percent increase in Gallup approval is associated with two-thirds of a percent increase in exports, holding other things constant. This is not only economically large but statistically significant; the robust t-statistic of 5.5 rejects the null hypothesis of no effect at any reasonable confidence level. Since both the regressor and regressand are in logs, the coefficient of .66 can be interpreted as an estimated elasticity of exports with respect to soft power; a one percent increase in bilateral approval delivers two-thirds of a percent increase in bilateral exports, *ceteris paribus*.

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Correspondingly, a one percent increase in leadership disapproval is associated with a .35 percent decrease in exports, a result which is again both economically and statistically large (the robust t-statistic is -3.5). Unsurprisingly the column at the extreme right shows that an increase in *net* Gallup approval has a strong positive effect; the coefficient is .9 with a robust t-statistic of 4.5.[11] This coefficient is economically large; a decline in net fraction approval of one standard deviation (.33) lowers exports by around (.33*.91≈) .3%. Average net approval by foreigners of American leadership declined from +16.6% in 2016 (Obama's final year in office) to -7.4% in 2017 (the first year of the Trump presidency). This swing of 24 percentage points in net approval would be expected to lower American exports by (.24*.91*$1.45tn≈) .22% or $3.3 billion. Even this calculation is conservative if countries that are large importers of American products also disapprove of Trump disproportionately, as seems relevant. Net approval of American leadership in both Canada and Mexico fell by more than 60 percentage points, and these are America's two largest importers, together accounting for over a third of American exports (details in Appendix Table A2).[12]

To summarize: the evidence points to a powerful role of soft power in export determination, even holding other effects constant through the gravity model. Or, more precisely and narrowly, countries sell more exports to importers which approve more of the job performance of their leadership.[13]

Different Measures of Soft Power

The results in Table 2 indicate that soft power plays a strong role in export determination, even after accounting for other factors through the gravity model. However,

assumptions are built into the estimates of Table 2, and it is important to know whether the apparently strong effect of soft power depends sensitively on unimportant or questionable assumptions. Since the gravity model has been widely and successfully used for decades, the most obvious thing to examine is the key soft power regressor. Accordingly, Table 3 uses a variety of alternative measures of soft power to see if the message from Table 2 is fragile. I use two different approaches: a) altering the way I use the Gallup measure; and b) using alternatives to the Gallup measure.

The top of Table 3 changes the precise way that the Gallup measure enters equation (1); default results from Table 2 are recorded on top to facilitate comparison. Immediately below, I use the level of the Gallup measures rather than its logarithm.[14] Next I engage in a quick check for dynamic effects: a) I substitute the (one-year) lag of the Gallup measures for the contemporaneous value; and b) I include the sum of contemporary, first, and second lags of the Gallup measures. None of these perturbations change the message of Table 2 substantively. Using the level rather than the log of approval leaves the signs of the coefficients unchanged but eliminates the statistical significance of the disapproval effect; adding lagged effects increases the effect of soft power somewhat.[15]

In the bottom part of Table 3, I substitute two different measures of soft power. Gallup asks participants in foreign countries if they approve of the leadership's job performance; the BBC/GlobeScan survey asks if participants think that certain countries are having a mainly positive influence in the world; Pew asks whether people have favorable opinions of foreign countries (Appendix Table A1 provides the precise wording). I sequentially substitute BBC/GlobeScan and Pew measures of soft power for the Gallup measures. Reassuringly, while

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the sample sizes for the alternative measures (recorded at the right) are lower than those for

the Gallup measure, the sign, size and statistical significance of the soft power coefficients are

similar. The effect of soft power on exports appears to be a substantive result.[16]

Robustness

I now check that the key results are insensitive to assumptions in my methodology. I do

so by: a) perturbing the underlying statistical model; b) dropping parts of the data set; and c)

using different estimation strategies. I tabulate the resulting empirical estimates of γ in Table 4.

As usual, there are three estimates of γ, for a) log exporter approval by the importer, b) log

disapproval, and c) net fractional approval. To make the robustness checks straightforward, the

benchmark estimates from Table 2 are again presented in the top row.

I begin by dropping the gravity model regressors (i.e., setting {β}=0). The gravity model

is known to be a successful empirical model of bilateral trade flows, so it is unsurprising that

dropping those variables results in a worse-fitting equation and thus a corresponding boost to

the soft power coefficients.[17] Replacing the (1481) time-varying exporter and importer fixed

effects with (174) time-invariant exporter and importer fixed effects along with a set of global

time fixed effects, does not destroy the key result. However, adding (725) dyadic pair-specific

fixed effects to the time-varying exporter- and importer-fixed effects essentially reduces the

soft power effect to economic and statistical insignificance (though the coefficient signs remain

unchanged). It does this by improving the quality of the fit dramatically; the R^2 rises from .87 to

.98, while the RMSE plunges from 1.07 to .45. Succinctly, adding dyadic- to time-varying

exporter- and importer-FE kills the statistical significance of the soft power result, at least in

this sample of data and using least squares; I pursue this issue further below.[18]

While the soft power results rely on dyadic variation, they do not seem to rely on the

exact sample of data included in the regressions. Dropping either the first part of the sample

(2006-09) or the last part (2014-17) does not destroy the results. Using years individually

delivers comparable results; this is unsurprising, since most of the variation is cross-sectional.

The results are unaffected if American observations (for both exports and imports) are

excluded. I also drop data for all industrial exporters (Germany, UK, and US) and all industrial

importers.[19] The sign and statistical significance of the γ coefficients persist through these

tests, and their size is often higher than in my benchmark results. Perhaps more importantly,

the soft power effect does not depend on outlier observations, as shown by the perturbation

that drops observations where the residual lies at least 2.5 standard errors from the mean.[20]

The final set of checks provided in Table 4 concern estimation. Most straightforwardly, I

replace the robust standard errors clustered by dyadic country-pair with conventional standard

errors; this results in much higher estimated precision. A more important issue is the estimator

itself. Since exports cannot be negative and not all trade flows are positive, Santos Silva and

Tenreyro (2006) have argued forcefully for the need for Poisson pseudo-maximum likelihood

(PPML) estimation of gravity models in levels (rather than logarithms). I proceed using Tom

Zylkin's fast Poisson Pseudo-maximum Likelihood estimation command, which adds dyadic

fixed effects to time-varying exporter- and importer effects; the resulting γ estimates retain

their signs and two of the three effects are statistically significant at conventional levels (the

exception being log disapproval).[21] I explore the sensitivity of this finding further in Appendix

Table A4, which shows that PPML estimates with exporter-time, importer-time, and exporter-importer fixed effects are reasonably robust, even though including three sets of fixed effects mean that the 6283 observations are used to estimate 2205 coefficients. For instance, all of the ten estimates of the effect of net approval on exports are positive, and nine (eight) of these are significantly different from zero at the .05 (.01) level.

One country's approval of the leadership of another country, as estimated by Gallup, is probably an imperfect measure of the latter's soft power vis-à-vis the former. Further, both an importer's purchases from a particular exporter and the importer's perceptions of the exporter's soft power might be driven by a common external shock. For both reasons, it seems wise to pursue instrumental variables estimation of (1). Given the dearth of plausible instrumental variables, I proceed in two ways. First, I successively use the two alternative measures of soft power – the BBC/GlobeScan measure of influence in the world, and the Pew measure of favorable opinion – as instrumental variables for the Gallup measure of job performance approval.[22] The resulting IV estimates retain the signs and indeed magnitudes of the default LS estimates; five of the six coefficients remain significantly different from zero at conventional levels, despite the fact that the sample size falls by >80%. Secondly, I average the views of a particular exporter's approval in a given year across all *other* importing countries, excluding both the importer and all other countries that import a significant fraction (I use both 10% and 20% of total imports as thresholds) from the exporter.[23] Using either the 10% or 20% threshold, the IV estimates for the approval coefficient remain positive, large and statistically significant. However, the net approval coefficient is only significant at the 20% threshold, while both disapproval coefficients are positive and economically and statistically insignificant. Better

IV results await better instrumental variables. Still, two-thirds of the IV estimates are similar in size and significance to the LS estimates; none delivers a message inconsistent with the latter.

I conclude that the soft power effect on exports is relatively robust. The results do not vanish with different functional forms, dynamics, measures of soft power, country- or time-samples, or estimation techniques. It is not completely insensitive; adding dyadic fixed effects reduces LS (but not PPML) results to insignificance, and some instrumental variable results are insignificant. The fact that the results are resilient to most perturbations lends some confidence to the exercise. Given the limited time span of the data, there seems to be strong reason to believe that trade flows are affected by perceptions of foreign leaders.

5. Conclusion

In this paper, I have attempted to help establish a new stylized fact, namely that soft power – the ability of one country to attract another – matters to international trade. Holding other determinants constant through the widely recognized gravity model, Canada is likely to buy more from the United States if American exerts soft power over Canada. I measure soft power with an annual Gallup survey that asks respondents in over 150 countries between 2006 and 2017 if they approve or disapprove of the leadership of five big exporters (China, Germany, Russia, the UK and the USA).

I estimate that an increase of one percentage point in net (American) leadership approval boosts (American) exports by around one one-hundredth of a percent. This effect is insensitive to most perturbations in the underlying methodology. It is also an economically

large effect, given that swings in leadership approval are often over twenty percentage points,

as occurred both when Obama succeeded Bush in 2009 or when Trump succeeded Obama in

2017. Indeed, it is sadly ironic that one effect of the loss of American soft power associated

with President Trump – a man obsessed by the trade deficit – is lower American exports.

Much remains to be done; accordingly, I conclude with two directions for further work.

It is important to better understand the sensitivity of my results to the inclusion of dyadic fixed

effects; this could be a function of the short sample size, or it may be some other phenomenon.

If my result is robust, it will also be important to explore the mechanism through which the soft

power effect works.

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Table 1: Descriptive Statistics

	Mean	Std. Dev.	Min.	Max.	Correlation with Log Exports	Correlation with Net Approval
Log Exports	6.6	2.6	-7.2	13.0		-.15
% Approve of Leadership	38.7	19.7	1	96	-.11	.87
% Disapprove of Leadership	29.5	17.7	1	91	.12	-.81
Net Fraction Approval	.09	.33	-.88	.95	-.15	
Log Distance	8.2	.7	5.2	9.4	-.32	-.10
Common Language	.10	.30	0	1	.08	.14
Common Border	.06	.24	0	1	.26	.03
Regional Trade Agreement	.11	.31	0	1	.25	.11
Colonial Relationship	.04	.20	0	1	.05	.06

6,358 Observations.

Table 2: Default Gravity Model of Exports

Log(Approval of Exporter)		.66** (.12)		
Log(Disapproval of Exporter)			-.35** (.10)	
Net Fraction Exporter Approval				.91** (.20)
Log Distance	-.92** (.09)	-.77** (.09)	-.89** (.09)	-.83** (.09)
Common Language	.45** (.18)	.39* (.17)	.38* (.18)	.35* (.18)
Common Border	.76** (.29)	.76** (.29)	.82** (.30)	.79** (.30)
Regional Trade Agreement	.73** (.21)	.52** (.19)	.60** (.20)	.54** (.19)
Colonial Relationship	.88** (.20)	.81** (.20)	.88** (.20)	.83** (.02)
Observations	6,331	6,331	6,331	6,331
#Exporter-Year FE	55	55	55	55
#Importer-Year FE	1426	1426	1426	1426
R^2	.87	.87	.87	.87
Root MSE	1.09	1.07	1.08	1.08

Coefficients on regressors (identified in row) with robust standard errors (clustered by dyads) in parentheses. Coefficients significantly different from zero at .05/.01 level marked with one/two asterisk/s. Each column represents a different least squares regression. Regressand: natural log of annual nominal bilateral exports (in US$). Data includes up to 5 exporters and 157 importers, 2006-17. Controls included but not recorded for time-varying exporter and importer fixed effects.

Table 3: Effect of Importer's Perception of Exporter on Exports: Different Measures

Perception of Exporter:	Good	Bad	Net	Observations
Default: Log (Approval), Gallup	.66** (.12)	-.35** (.10)	.91** (.20)	6,331
Approval Level (not log), Gallup	.029** (.004)	-.005 (.004)	n/a	6,331
Lag of Approval, Gallup	.70** (.12)	-.38** (.10)	1.02** (.20)	5,812
Sum of Current+1st+2nd Lags, (χ^2 (1)), Gallup	.78** (27.8)	-.41** (11.5)	1.08** (20.8)	4,166
Log (Positive Influence), BBC	.48** (.13)			3,369
Log (Negative Influence), BBC		-.30** (.10)		3,369
Net Fraction Influence, BBC			.77** (.22)	3,369
Log (Favorable Opinion),Pew	.55** (.17)			1,946
Log (Unfavorable Opinion), Pew		-.31* (.12)		1,945
Net Fraction Favorability, Pew			.62** (.22)	1,946

Coefficients on regressors (identified in left column) with robust standard errors (clustered by dyads) in parentheses. Coefficients significantly different from zero at .05/.01 level marked with one/two asterisk/s. Each cell represents a different least squares regression. Regressand: natural log of annual nominal bilateral exports (in US$). Controls included but not recorded for: a) log of distance; b) binary variables for 1) common language, 2) common land border, 3) common regional trade agreement, and 4) colonial relationship; and 5) time-varying exporter and importer fixed effects.

Table 4: Sensitivity Analysis

	Log(Exp. Approval)	Log(Exp. Disapproval)	Net Fraction Approval
Default	.66**	-.35**	.91**
	(.12)	(.10)	(.20)
Drop gravity covariates	1.45**	-.78**	2.15**
	(.14)	(.13)	(.23)
Substitute Exporter, Importer, Time FE	.41**	-.23**	.64**
	(.07)	(.06)	(.14)
Add Dyadic FE	.03	-.06	.20*
	(.05)	(.04	(.08)
Drop 2006-09	.76**	-.43**	1.01**
	(.14)	(.12)	(.22)
Drop 2014-17	.66**	-.33**	.99**
	(.12)	(.10)	(.21)
2009	.58**	-.26*	.90**
	(.15)	(.11)	(.26)
2014	.53**	-.39*	.71*
	(.18)	(.15)	(.28)
Drop United States	.73**	-.43**	1.04**
	(.14)	(.12)	(.24)
Drop Industrial Exporters	1.53**	-.86**	2.54**
	(.31)	(.30)	(.69)
Drop Industrial Importers	.93**	-.44**	1.31**
	(.15)	(.11)	(.25)
Drop >|2.5σ| residuals	.62**	-.32**	.79**
	(.10)	(.09)	(.17)
Conventional standard errors	.66**	-.35**	.91**
	(.05)	(.04)	(.08)
PPML on exports (with dyadic FE)	.05*	-.02	.10**
	(.02)	(.02)	(.04)
IV (BBC/Globescan influence; 975 obs)	.39**	-.28*	.57**
	(.12)	(.12)	(.20)
IV (Pew favorable; 835 obs)	.53**	-.20	.55**
	(.13)	(.14)	(.21)
IV (others' approval, <20% export)	.59**	.03	.41**
	(.06)	(.05)	(.09)
IV (others' approval, <10% export)	.24**	.07	.15
	(.08)	(.07)	(.12)

Coefficients on regressors (identified in top row) with robust standard errors (clustered by dyads) in parentheses. Coefficients significantly different from zero at .05/.01 level marked with one/two asterisk/s. Each cell represents a different least squares regression. Regressand: natural log of annual nominal bilateral exports (in US$). Data includes up to 5 exporters and 157 importers, 2006-17. Controls included but not recorded for: a) log of distance; b) binary variables for 1) common language, 2) common land border, 3) common regional trade agreement, and 4) colonial relationship; and 5) time-varying exporter and importer fixed effects.

Figure 1

Foreign Views about the Leadership of Four Exporters

Histograms of net fraction approval, up to 157 countries
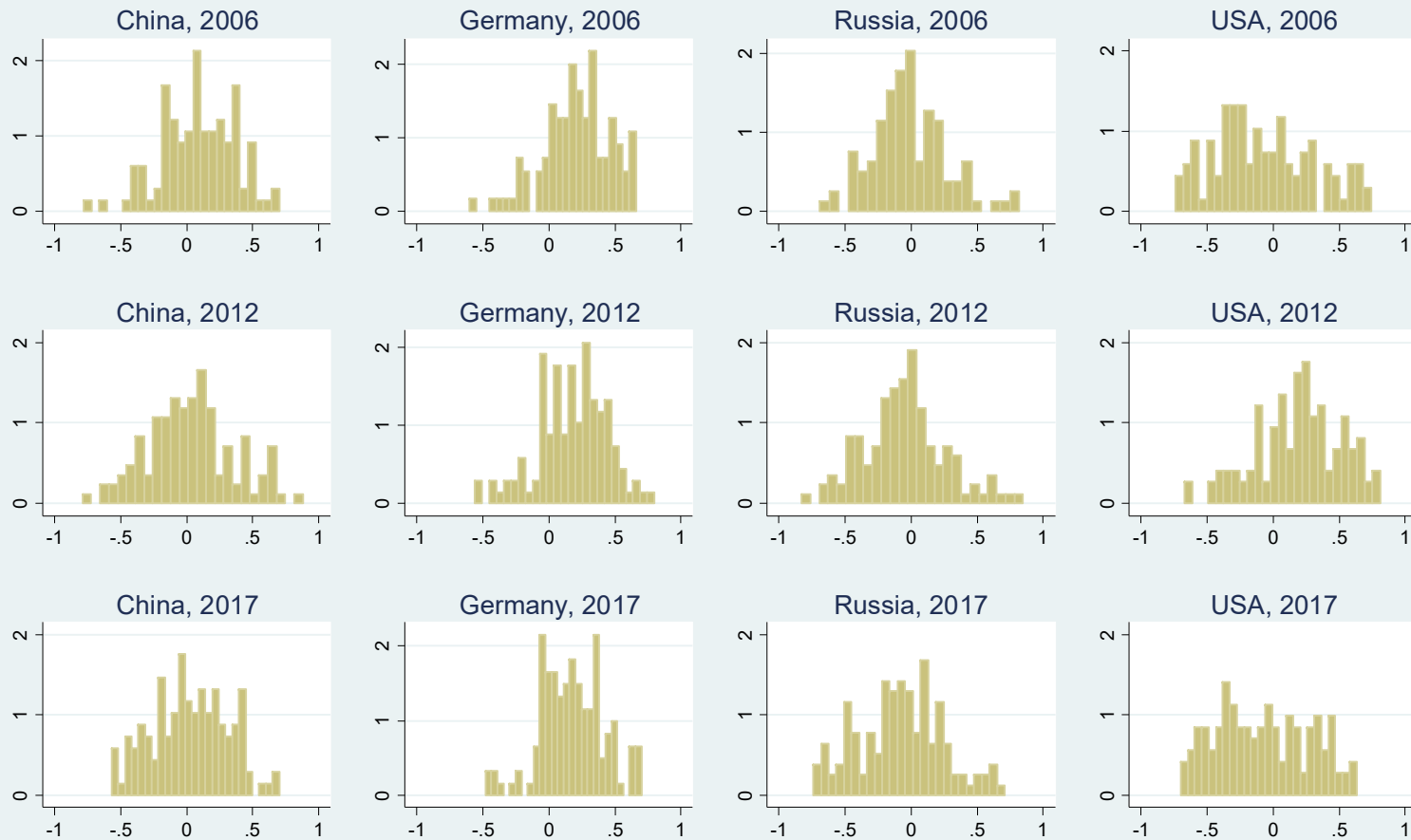
Gallup: Do you approve or disapprove of the job performance of the leadership of _____?

Figure 2

Average Foreign Views about the United States

Unweighted Means from up to 157 Countries

Gallup: Do you approve or disapprove of the job performance of the leadership of the United States?

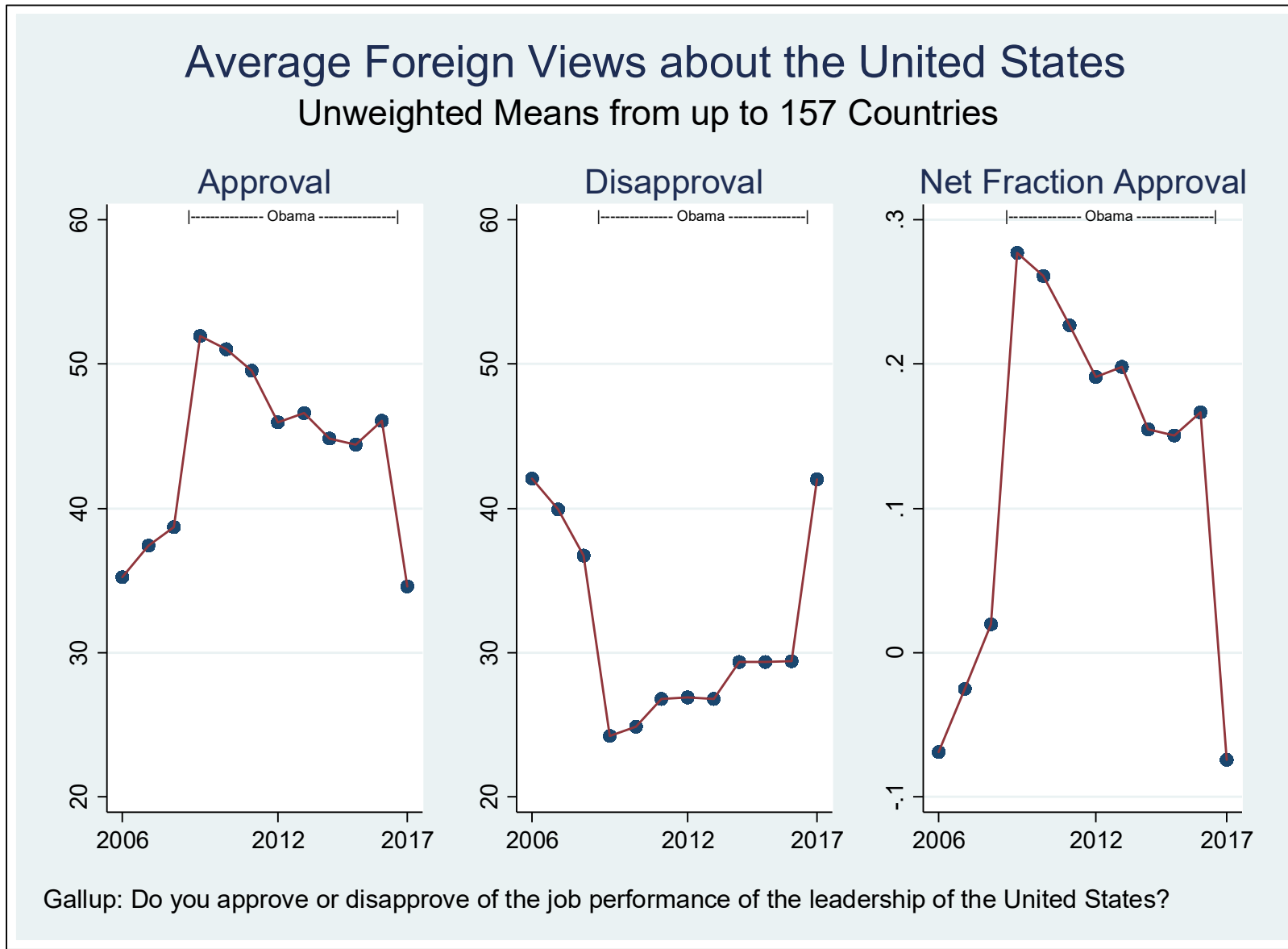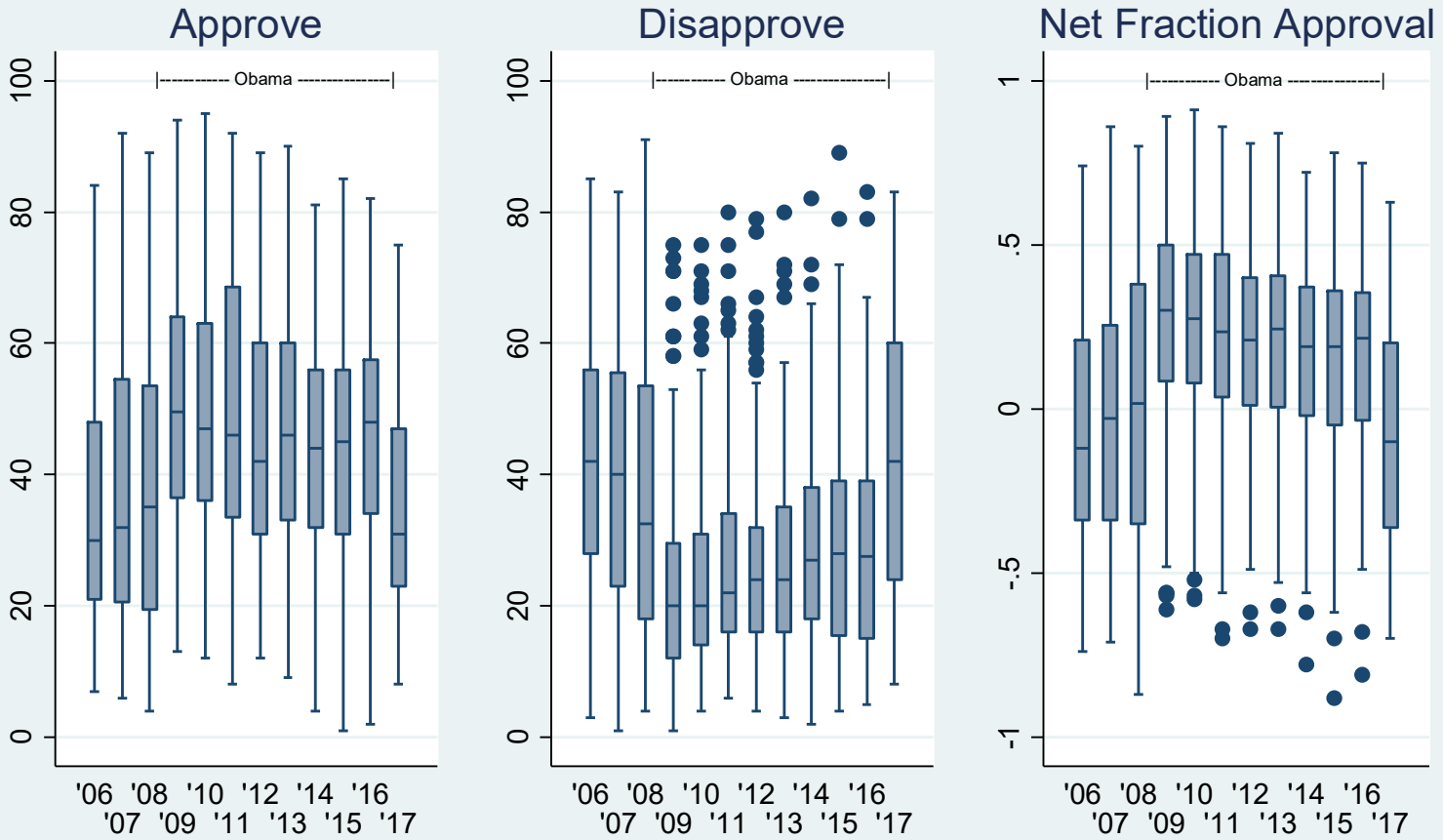**Figure 3**

Foreign Views about American Leadership
Box Plots of Surveys from up to 157 Countries

Approve   Disapprove   Net Fraction Approval

Gallup: Do you approve or disapprove of the job performance of the leadership of the United States?

Figure 4

Views of American and German Leadership

Obama vs. Trump; 157 countries, symbol area proportional to exports

Foreign Views of US — Approve

Foreign Views of US — Disapprove

Foreign Views of Germany — Approve

Foreign Views of Germany — Disapprove

Gallup: Do you approve or disapprove of the job performance of the leadership of US/Germany?

Figure 5

Views of Chinese and Russian Leadership

Obama vs. Trump; 157 countries, symbol area proportional to exports

Foreign Views of China
Approve

Foreign Views of China
Disapprove

Foreign Views of Russia
Approve

Foreign Views of Russia
Disapprove

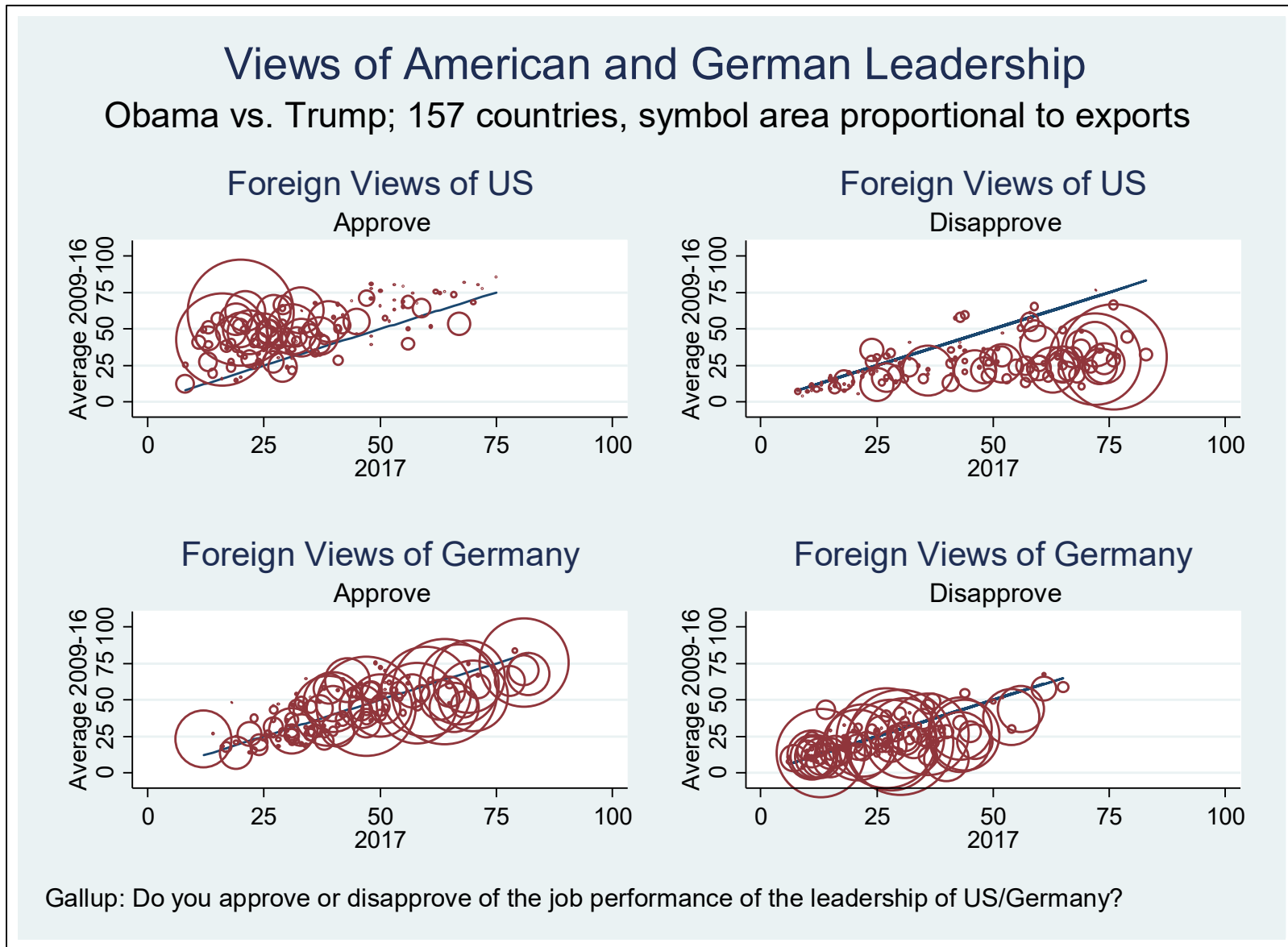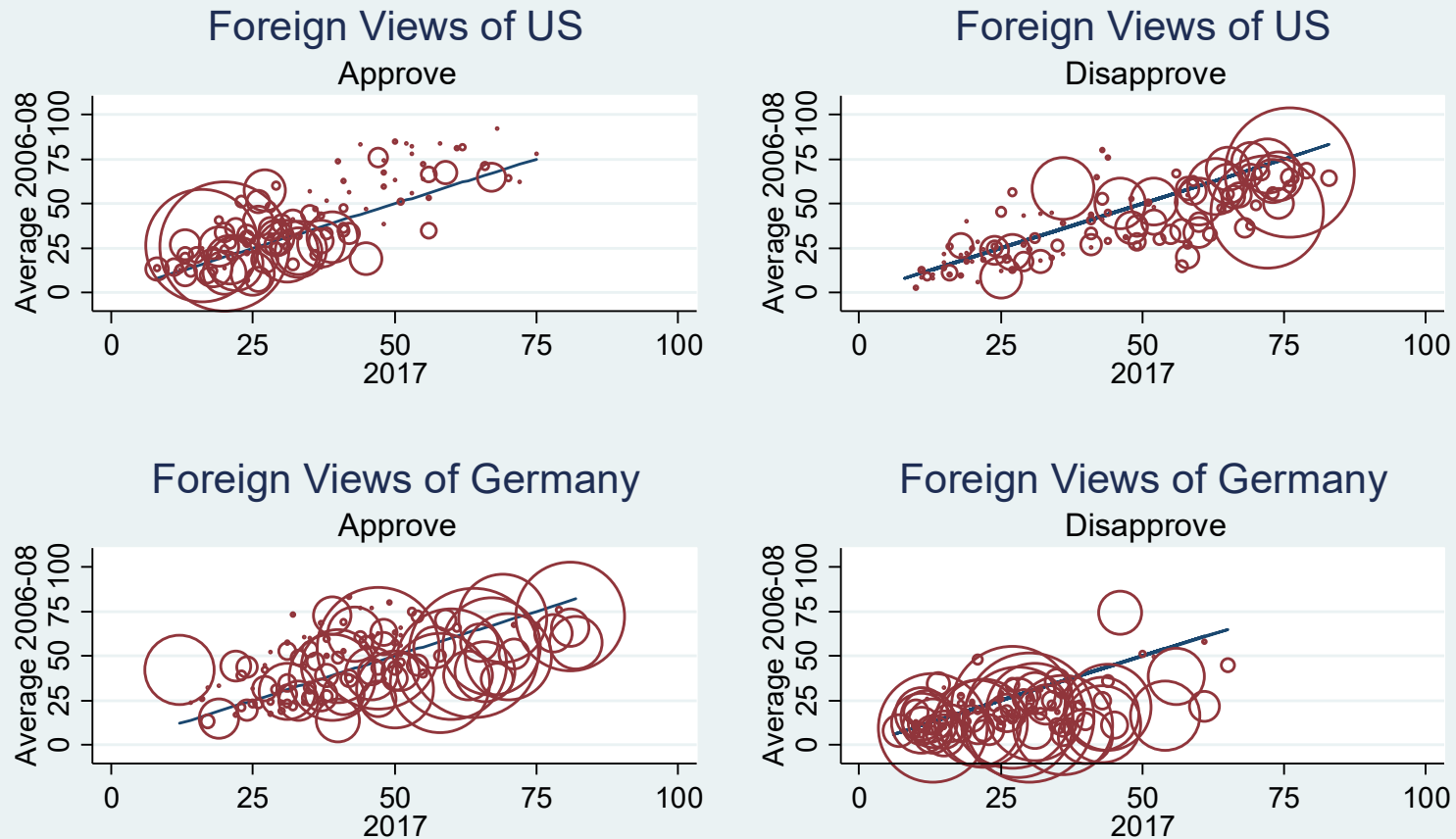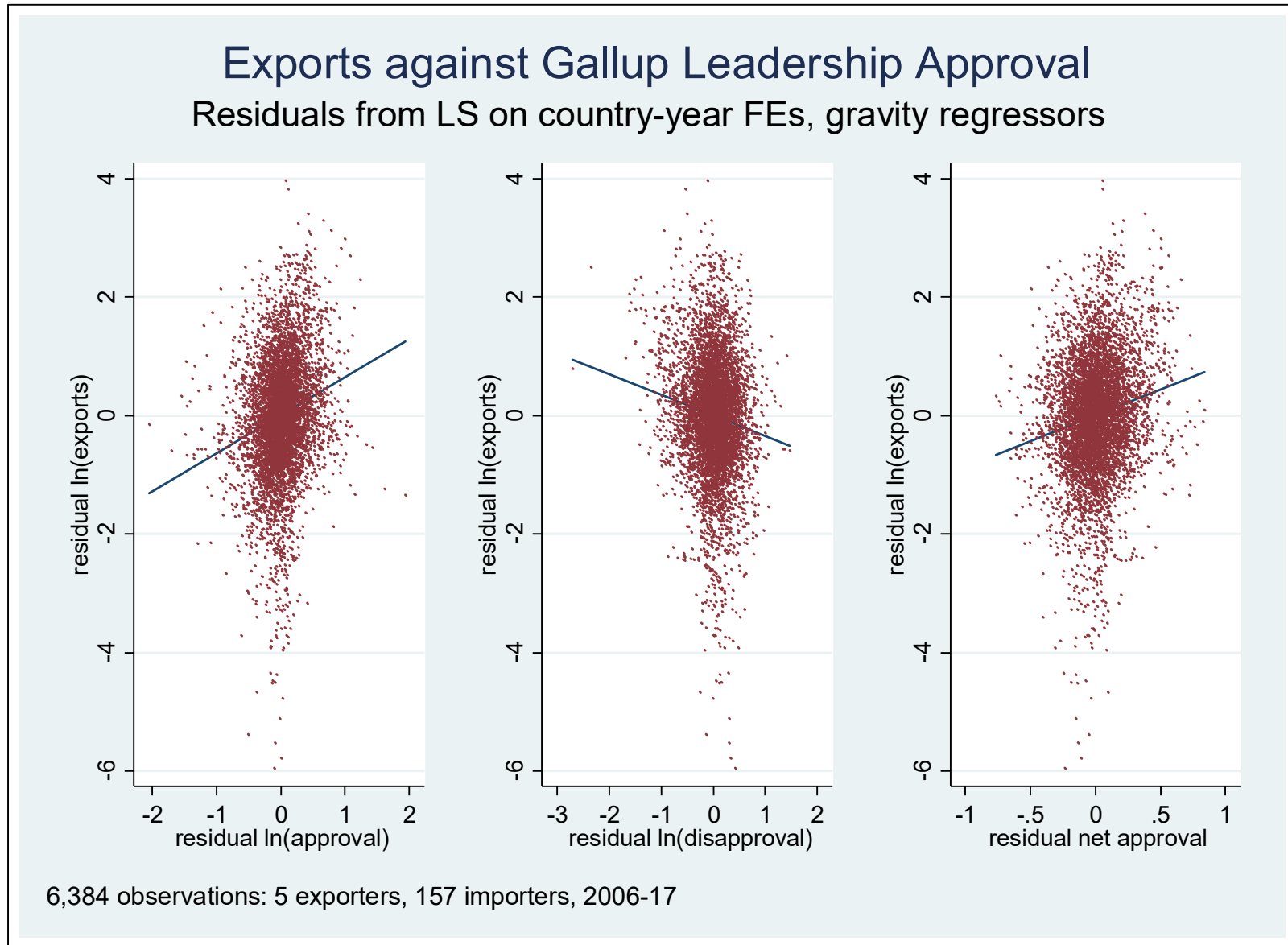Gallup: Do you approve or disapprove of the job performance of the leadership of China/Russia?

Figure 6

Perceptions of Leadership under Republican Presidents
Bush vs. Trump; 157 countries, symbol area proportional to exports

Foreign Views of US — Approve
Foreign Views of US — Disapprove
Foreign Views of Germany — Approve
Foreign Views of Germany — Disapprove

Gallup: Do you approve or disapprove of the job performance of the leadership of US/Germany?

Figure 7

Exports against Gallup Leadership Approval

Residuals from LS on country-year FEs, gravity regressors

6,384 observations: 5 exporters, 157 importers, 2006-17

Appendix Table A1: Bilateral Soft Power Survey Questions

Source	Exporters (max)	Importers (max)	Range (max)	Observations (max)
Gallup (Default)	5	157	2006-17	6,411
Do you approve or disapprove of the job performance of the leadership of _____?				

Source	Exporters (max)	Importers (max)	Range (max)	Observations (max)
BBC/GlobeScan	17	46	2006-17	3,439
Please tell me if you think each of the following are having a mainly positive or negative influence in the world?				

Source	Exporters (max)	Importers (max)	Range (max)	Observations (max)
Pew	27	64	2002-17	2,056
Please tell me if you have a very favorable, somewhat favorable, somewhat unfavorable or very unfavorable opinion of _____?				

Appendix Table A2: Some Sample American Data

	2017				2016
	Exports	Approval	Disapproval	Net Approval	Net Approval
Canada	282,116	20	76	-.56	.23
Mexico	242,989	16	72	-.56	.10
China	130,370				
Japan	67,696	31	36	-.05	.28
UK	56,329	33	63	-.30	.27
Germany	53,493	22	72	-.50	-.06
Korea	48,277	39	46	-.07	..31
Netherlands	42,230	21	74	-.53	..25
Hong Kong	40,024	37	60	-.23	.13
Brazil	37,077	33	52	-.19	.33
France	34,198	25	65	-.40	.18
Belgium	29,911	20	73	-.53	.34
Singapore	29,753	27	25	.02	.51
India	25,700	29	27	.02	.08
Australia	24,601	19	65	-.46	.17
Switzerland	21,711	18	69	-.51	-.04
UAE	20,005				
Italy	18,323	45	48	-.03	.24
Saudi Arabia	16,261				
Chile	13,608	13	74	-.61	.11

Nominal bilateral American exports in $millions; Gallup approval/disapproval/net approval of the job performance of American leadership, in percentage points (net approval in fractions).

Appendix Table A3: Countries Surveyed by Gallup

Countries whose leadership was asked about/Exporters (number of observations)

China (1,416)	Russia (1,389)	USA (1,434)	
Germany (1,401)	UK (771)		

Countries Surveyed about foreign leadership/Importers (number of observations)

Afghanistan (45)	Djibouti (20)	Latvia (50)	Senegal (55)
Albania (45)	Dominican Rep (35)	Lebanon (55)	Serbia (45)
Algeria (27)	Ecuador (46)	Lesotho (13)	Sierra Leone (45)
Angola (18)	Egypt (51)	Liberia (35)	Singapore (46)
Argentina (49)	El Salvador (43)	Libya (9)	Slovakia (40)
Armenia (55)	Estonia (50)	Lithuania (55)	Slovenia (44)
Australia (50)	Ethiopia (25)	Macedonia (45)	Somalia (12)
Austria (50)	Finland (45)	Madagascar (40)	S Africa (50)
Azerbaijan (55)	France (55)	Malawi (41)	Spain (55)
Bahrain (5)	Gabon (30)	Malaysia (43)	Sri Lanka (51)
Bangladesh (55)	Gambia, The (4)	Mali (50)	Sudan (4)
Belarus (55)	Georgia (55)	Malta (20)	Suriname (5)
Belgium (50)	Germany (42)	Mauritania (50)	Swaziland (5)
Belize (9)	Ghana (55)	Mauritius (17)	Sweden (55)
Benin (35)	Greece (50)	Mexico (50)	Switzerland (31)
Bhutan (8)	Guatemala (53)	Moldova (55)	Syria (29)
Bolivia (50)	Guinea (30)	Mongolia (45)	Tajikistan (55)
Bosnia & Herz. (45)	Guyana (5)	Morocco (35)	Tanzania (55)
Botswana (44)	Haiti (45)	Mozambique (28)	Thailand (55)
Brazil (52)	Honduras (55)	Myanmar (25)	Togo (31)
Bulgaria (45)	Hong Kong (42)	Namibia (13)	Trinidad & Tob. (23)
Burkina Faso (50)	Hungary (50)	Nepal (50)	Tunisia (40)
Burundi (19)	Iceland (26)	Netherlands (47)	Turkey (55)
Cambodia (55)	India (55)	New Zealand (50)	Turkmenistan (30)
Cameroon (51)	Indonesia (55)	Nicaragua (50)	Uganda (50)
Canada (54)	Iran (45)	Niger (54)	Ukraine (55)
CAR (23)	Iraq (45)	Nigeria (55)	UAE (15)
Chad (55)	Ireland (50)	Norway (31)	UK (47)
Chile (54)	Israel (55)	Pakistan (55)	USA (39)
Colombia (54)	Italy (55)	Panama (50)	Uruguay (45)
Comoros (20)	Jamaica (22)	Paraguay (35)	Uzbekistan (50)
DR Congo (35)	Japan (55)	Peru (51)	Venezuela (55)
Rep. Congo (35)	Jordan (15)	Philippines (55)	Vietnam (47)
Costa Rica (50)	Kazakhstan (55)	Poland (55)	W Bank & Gaza (55)
Cote d'Ivoire (25)	Kenya (50)	Portugal (50)	Yemen (37)
Croatia (45)	Korea (55)	Qatar (6)	Zambia (47)
Cuba (5)	Kosovo (45)	Romania (50)	Zimbabwe (47)
Cyprus (45)	Kuwait (10)	Russia (43)	
Czech Rep (50)	Kyrgyzstan (55)	Rwanda (40)	
Denmark (55)	Laos (24)	Saudi Arabia (20)	

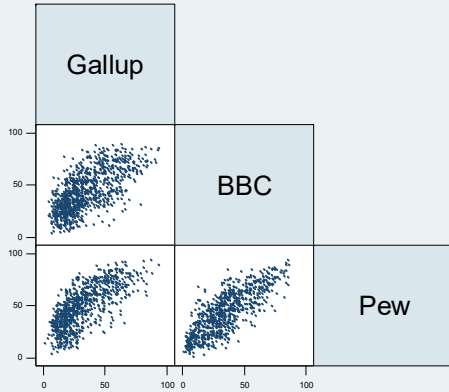**Appendix Table A4: PPML Estimation of the Soft Power Effect on Exports**

	Log(Exp. Approval)	Log(Exp. Disapproval)	Net Fraction Approval
Default	.052*	-.024	.101**
	(.022)	(.022)	(.038)
Approval Level (not log), Gallup	.0020**	-.0019**	n/a
	(.0007)	(.0007)	
Log (Influence), BBC	.064**	-.010	.077**
	(.018)	(.014)	(.029)
Log (Opinion),Pew	.101**	.002	.070
	(.034)	(.027)	(.050)
Lag of Approval, Gallup	.065**	-.033	.131**
	(.020)	(.022)	(.036)
Current+1st+2nd Lags, (χ^2 (1)), Gallup	.104**	-.083*	.248**
	(8.7)	(4.0)	(15.6)
Drop 2006	.048*	-.033	.109**
	(.022)	(.022)	(.037)
Drop 2017	.058**	-.029	.116**
	(.022)	(.022)	(.039)
Only industrial Exporters	.070*	-.058*	.069*
	(.029)	(.023)	(.034)
No industrial Importers	.072*	-.015	.153**
	(.030)	(.030)	(.053)
Drop >|2.5σ| residuals	.034	-.018	.093**
	(.022)	(.021)	(.036)

Coefficients on regressors (identified in top row) with robust standard errors (clustered by dyads) in parentheses unless marked. Coefficients significantly different from zero at .05/.01 level marked with one/two asterisk/s. Each cell represents a different PPML regression. Regressand: level annual nominal bilateral exports (in US$). Data includes up to 5 exporters and 157 importers, 2006-17. Controls included but not recorded for: a) common regional trade agreement, b) time-invariant exporter-importer (dyadic) fixed effects and c) time-varying exporter and importer fixed effects.
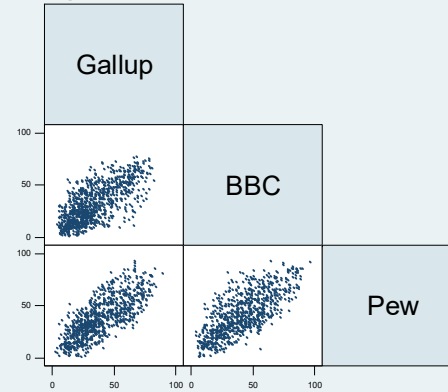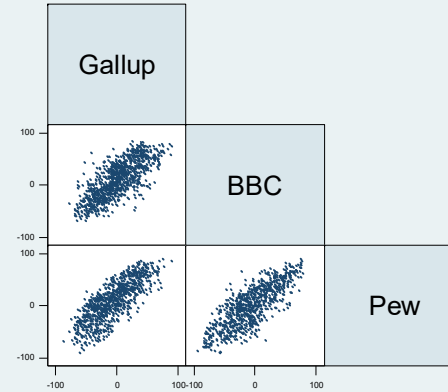
Figure A1

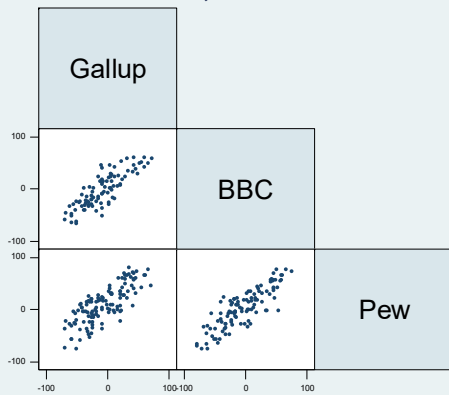# Different Measures of Soft Power

Positive, All Observations

Gallup

BBC

Pew

Negative, All Observations

Gallup

BBC

Pew

Net, All Observations

Gallup

BBC

Pew

Net, 2007

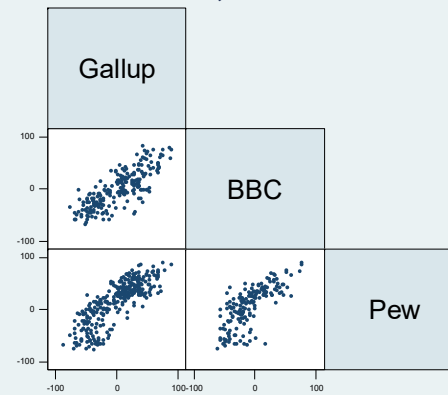Gallup

BBC

Pew

Net, 2017

Gallup

BBC

Pew

Net, USA

Gallup

BBC

Pew
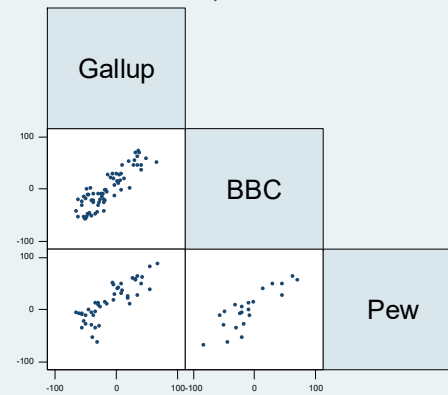
Gallup Approval of x's Leadership; BBC x's Influence in World; Pew Opinions of x

Endnotes

[1] Not all of these entities have sovereignty; for instance, Hong Kong is a Special Administrative Region.

[2] Further detail is available at https://www.gallup.com/analytics/232838/world-poll.aspx and https://www.gallup.com/analytics/234512/world-poll-topics.aspx .

[3] Gallup also asks about the leadership of the participant country (so that Canadians are always asked about Canadian leadership, etc.); I do not use these data below.

[4] Nye writes: "Broadly speaking, power is the ability to affect the behavior of others to get the outcomes you want, and there are three basic ways to do that: You can coerce them with threats. You can induce them with payments. Or you can attract and co-opt them… The ability to establish preferences tends to be associated with intangible assets such as an attractive personality, values, institutions, and a vision that are seen as legitimate or having moral authority. If a leader represents a vision and values that others want to follow, it will cost less to lead. Soft power often allows a leader to save on costly carrots and sticks. Simply put, in behavioral terms, soft power is attractional power."
http://www.hks.harvard.edu/netgov/files/talks/docs/11_06_06_seminar_Nye_HP_SP_Leadership.pdf .

[5] There are a variety of alternative measures of soft power (e.g., https://softpower30.com/, https://monocle.com/all/affairs/soft-power/, and http://www.globalpresence.realinstitutoelcano.org/en/home); these are 'monadic' in that they measure a country's soft power (implicitly, vis-à-vis the rest of the world) at a point in time. Associated with this is a small industry that facilitates and sometimes quantifies the development of 'nation brands' (e.g., http://nation-branding.info/, https://placebrandobserver.com/theory/nation-branding-perspectives/, and https://www.bloom-consulting.com/en/). Even ignoring the accuracy of these measurements, any and all 'monadic' measures (such as a country's 'soft power' or 'nation brand') are collinear with and hence subsumed within the country-time fixed effects ($\{\lambda_{it}\}$, $\{\psi_{jt}\}$). For this reason, the research in this paper relies on bilateral measures; not how much soft power Australia has in 2018, but rather the perception of Australian soft power in 2018 as seen by Belgium, Canada, Denmark, etc.

[6] It is possible to overstate the importance of this critique. Most countries on the list are not known for hard power, and those that are (e.g., the United States) are not at the top of the list; survey participants do not begin by answering about countries known for hard power. Further, it is hard to understand why hard power might result in higher exports, *ceteris paribus*. This is especially true since the country-year fixed effects should account for hard power.

[7] Further details are available at https://globescan.com/insight/?gst=bbc-world-service-survey .

[8] Further details are available at http://www.pewglobal.org/ .

[9] The decline in America's popularity since the presidency of Donald Trump, as perceived by other countries, is clear in other bilateral surveys, including both the Pew and BBC/GlobeScan surveys used below, as well as the less accessible Ipsos' Global @dvisor (https://www.ipsos.com/en-us/news-polls/perceptions-us-countries-influence-world-affairs-2017). The decline in American soft power also appears in monadic work, such as Portland's Soft Power 30 (https://softpower30.com/country/united-states/) .

[10] This is unsurprising, since the model includes a comprehensive set of monadic time-varying dummies for both exporters and importers.

[11] The soft power estimates here are similar in both economic size and statistical significance to those presented in Rose (2016). The latter relied on the BBC/GlobeScan data and delivered γ estimates of .50, -.28, and .80, close to the estimates of .66, -.35, and .91 tabulated in Table 2 above.

[12] The research presented in this paper does not address the precise mechanism(s) through which soft power affects exports. Most importers face a range of potential exporters for a given product, and can plausibly express their affection/disdain for a foreign country/leader through their purchases, at least at the margin. For example, Trump's behavior during the 2018 G7 summit prompted some Canadians to avoid buying American products; https://www.npr.org/2018/06/28/623518328/canadians-are-livid-about-trump-and-are-hitting-back-by-boycotting-u-s-goods.

[13] In passing, I note that the (nuisance) gravity coefficients change only a little; none change sign or lose either economic or statistical significance. The improvement in fit of the underlying model is marginal; these measures of soft power contribute little in explaining export variation.

[14] Figure 7 scatters log exports against the approval ratings, after first regressing each variable against the other regressors in equation (1). That is, I am implicitly using the Frisch-Waugh theorem to partial out the effects of gravity and the fixed effects from both the regressand and the key regressor. The resulting residual scatterplots, along with the fitted regression line, provide no evidence that the key relationship between log exports and the Gallup ratings are non-linear in any sensible way.

[15] I have estimated a variety of simple dynamic models, including distributed lag, partial adjustment, and error correction models. All deliver the same conclusions of an economically and statistically large effect of soft power on exports; results are available at my website. This may be worth further examination once the time-series dimension of the panel is sufficiently large.

[16] Gallup also provides "Country Ratings" (https://news.gallup.com/poll/1624/perceptions-foreign-countries.aspx) in which ask survey participants their "overall opinion of some foreign countries. … Is it very favorable, mostly favorable, mostly unfavorable, or very unfavorable?" These questions are asked about a large number of foreign countries at different points of time, but unfortunately only from the American perspective. As such, this data cannot be used in the standard bilateral gravity model, since the responses would be perfectly collinear with exporter-year fixed effects. But if the latter are excluded, the results (available online) show that the more favorably/less unfavorably/more favorably on net that Americans view a foreign country, the more of its goods they purchase *ceteris paribus*.

[17] That is, I have acted conservatively by including the gravity controls in my analysis.

[18] Most variance in the dependent variable and the key regressors is between dyads, rather than time-series variation within dyads. For log exports, only 4% of the variation is within-dyad. The comparable proportions for the three measures of soft-power (net approval and the logs of approval and disapproval) are low but higher; the ratio varies between a quarter and a fifth, depending on the exact measure of soft power.

[19] The latter include all countries with IFS country codes less than 200: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Malta, Netherlands, New Zealand, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States.

[20] Other thresholds for outliers work comparably well.

[21] More details are available at https://ideas.repec.org/c/boc/bocode/s458249.html .

[22] I use the BBC and Pew measures separately as IVs, since each variable is only available individually for less a sixth of the Gallup observations. Adding both would result in an over-identified system, but at the cost of losing more than half the size of the (already much-reduced) sample.

[23] Consider American exports to Canada in 2017. From a statistical viewpoint, I am interested in whether these exports are determined in part by Canadian approval of the job performance of the American leadership (in practice, Gallup estimated this at 20%), *ceteris paribus*. To construct the instrumental variable, I exclude Canadian

perceptions and average the views of *other* countries' approval of American leadership in 2017, if those other countries did not import a significant share (alternatively either 10% or 20%) of their imports from United States (in practice, the observations of the instrumental variables for Canadian imports from the United States in 2017 were 35.8% using the 20% threshold, and 36.7% using the 10% threshold). The 10% threshold eliminates around a quarter of all possible observations from the averaging, while the 20% threshold eliminates around a tenth.