

The Evolutionary Effects of Democracy: In the long run, we are all trading?

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ABSTRACT

It is well established that democracy affects trade, but how does this relationship change over time? The results suggest that democracy increases trade openness both in the short and long run. However, democracy only leads to a reduction in trade restrictions in the short term. In addition, the durability of a polity is employed as an instrument in order to consider the possibility that democracy and trade are endogenously related. This method helps to isolate a causal effect of democracy on trade, and the results suggest that the economic effect of democracy is 2-3 times larger than under OLS.

KEYWORDS *democracy, trade, intertemporal, institutions*

1. INTRODUCTION

As early as the 19th century, David Ricardo explained how benefits accruing from the division of labor can allow individuals in nations to engage in mutually beneficial exchange by focusing their labor on their lowest opportunity costs. While economists disagree on many issues, one topic in which there is a general consensus is the beneficial effects of free trade. In a survey, Frey (1984) suggests that 88% of professional economists view free trade as superior to trade with barriers, and Frey et al (1984) survey economists and find that there is a general consensus towards the answer, "tariffs and import quotas reduce general economic welfare." The empirical evidence appears to support these views on the benefits of exchange in international trade.

Since the 1970s, globalization has increased dramatically. Over four billion people have joined hands to trade in the past twenty-five years as part of an ever increasing attempt to globalize (Milner & Kubota, 2005). Further, trade barriers have declined dramatically since the mid 1980's and continue to decline. Rodrik (1994) described this involvement in the reduction of trade barriers as political leaders taking advantage of opportune moments during financial crises to accrue benefits for themselves.

At the same time, democratization is simultaneously taking place. This opens up the possibility that democratization plays at least a part of the increase in involvement in trade and openness of economics across the world. Here, democratization refers to the liberalization of a country's political process, which provides civil rights and voting rights to the general populace. In particular, democracies allow for general political participation, free and open elections, and checks on the executive authority. Of course, this is not the first paper to recognize this phenomenon. Milner & Kubota (2005) emphasize the need to control for time dummies in a panel of countries in order to control for this time effect and many others follow suit. Milner & Mukherjee (2009) offer a recent review of the literature on international political economy and trade and offer the conclusion that democratization has led to increases in trade. However, there is still much more to be explored in this literature.

This study makes two key contributions. First, while many studies have analyzed the impact of democracy on trade in a panel of countries, we are unaware of any study that measures this impact over different time periods. To our knowledge, this is the first study that analyzes the economic impact of democracy on trade in the short run and long run. López-Córdova & Meissner (2008) analyze the long-run relationship between trade and democracy, but they focus on the reverse direction of causation; the impact of international trade on democracy. Second, most studies treat measures of trade protection and trade output as substitute measures; some studies analyze the relationship between democracy and average tariff rates, others look at the impact of democracy on trade openness, and still others use the sum of exports and imports or some alternative derivative measure to gauge the impact of democracy on trade. However, it is more accurate to treat these measures as complements. Moreover, to our knowledge, no study has appropriately controlled for the degree of trade protection when analyzing the relationship

between democracy and trade. Democracy can influence trade through two channels. It can influence trade directly through influencing the amount of trade that takes place. In addition, democracy can influence trade indirectly through influencing trade policy, and the trade policy will influence trade output. Therefore, the second contribution of this study is that it analyzes the relationship between democracy and trade using indirect measures of trade (e.g., tariff rates) and direct measures of trade (e.g., imports and exports).

The findings in this study suggest that democracy and international trade are positively correlated using a panel of more than 100 countries during the period 1970-2010, which is consistent with many previous studies (Milner & Mukherjee, 2009). More importantly, the results suggest that the impact of democracy on trade output becomes larger over time; the coefficient estimates more than double from the five year estimation period to the twenty year period, which suggests that it takes time for the effects to be felt. In contrast, democracy only affects trade policy in the short term. These results are robust to a wide set of fragility checks including alternative democracy measures, inclusion of previously unutilized trade protection covariates, and controls for potential endogeneity stemming from reverse causality. This paper is organized as follows: Section 2 discusses the relationship between democracy and trade, Section 3 describes the data, Section 4 presents the identification strategy, Section 5 presents the results, Section 6 discusses the findings, and Section 7 summarizes and ends with areas for future research.

2. INTERNATIONAL POLITICAL ECONOMY OF TRADE

Krugman (1987) asserts that because trade interventions influence the distribution of income and its levels, the political process at the domestic level must be taken into consideration in any

explanation of trade policy. Scholars have taken this suggestion seriously and a large literature has surfaced in the past decade to analyze the international political economy of trade. Milner & Kubota (2005) provide some evidence to suggest that democratization leads to a greater increase in trade flows as measured by average tariff rates and the Sachs-Warner trade openness measure. Many other studies also arrive at similar conclusions using alternative measures of trade protection and trade liberalization.

Early studies tested the hypothesis that democratic transitions are likely to increase trade openness. Stokes (2001) and Weyland (2002) find evidence to support this hypothesis across countries in Latin America. Dutt & Mitra (2002) suggest that democratization may be associated with trade liberalization in countries where workers benefit from higher wages due to globalization. O'Rourke & Taylor (2006) suggest that democracy has a positive effect on trade conditional on factor endowments such as the capital-labor ratio.

The argument for democracy leading to increased trade is summarized by Milner & Kubota (2005). They argue that democratization expands the involvement in a polity, and it empowers groups in society that were formerly excluded from the political process. More importantly, in a developing country, the previously unheard voices of the low-skilled and unskilled workers favor trade openness because they are the abundant factors that stand to benefit from trade. More trade openness in developing countries increases the opportunity sets of workers, which can increase the standard of living. Democratization increases the voices of the abundant factor and political leaders face incentives to pay attention to the preferences of labor by lowering trade barriers. Therefore, one may expect democracy to increase trade due to the civil liberties and political freedom associated with democratization.

2.1 LONG TERM AND SHORT TERM EFFECTS OF DEMOCRACY

The largest contribution of this paper is to analyze the impact of democracy on trade in multiple time intervals. This intertemporal effect may be important for two reasons. First, it may be the case that democracy affects trade, but this effect takes time. Therefore, finding empirical evidence towards the efficacy of democratization and trade may be effected by the frequency of the time periods. Because it takes time for institutions to become developed and ingrained in society, the hypothesis is that longer time periods will have larger effects than shorter periods. Therefore, annual time periods in a panel setting may be too short to accurately assess the impact of democracy on trade. This study utilizes a panel of more than 100 countries in 5, 10, and 20 year intervals to assess the impact of democracy on trade in multiple time intervals. This is not the first study to employ this method. Recently, Rode & Gwartney (2012) use 5, 10, and 15 year periods to analyze the impact of democratization on market institutions and find that democracy is associated with market liberalization, but this effect wanes over time. López-Córdova & Meissner (2008) also examine the relationship between democracy and trade openness in the long-run. However, they analyze the reverse direction of causation and find that democracy facilitates trade openness only during the period 1920-1980.

The second contribution of this study is that it identifies the economic magnitude for each time interval. It may be true that democracy effects trade (see Milner & Mukherjee, 2009 for a review of the literature). However, if this effect does take time, it would be interesting to analyze the economic significance of the short term and long term effects of democracy on trade.

2.2 DIRECT AND INDIRECT EFFECTS OF DEMOCRACY

The literature treats measures of trade output and trade restrictions as substitute measures. Some studies use measures of trade output (Grofman & Gray, 2000; Eichengreen & Leblang, 2008; Yu, 2010). Other studies use measures of trade protections, usually including measures of tariff rates (Fidrmuc, 2003; Milner & Kubota, 2005; Giavazzi & Tabellini, 2005). However, these measures of trade are really complement measures. This is especially true when attempting to explain the variation in trade amounts as the dependent variable. In this case, measures of trade amounts such as exports and import values are also determined by trade protection measures, i.e., import amounts are affected by the prevailing tariff and regulatory restrictions policies.

One contribution of this study is that it analyzes the impact of democracy on trade output while also controlling for the degree of trade protection. Most studies do not take this into consideration in their empirical examination. This study also analyzes the impact of democracy on trade output and trade policy using the same data, controls, and empirical identification. This enables the researcher to directly compare whether the impact of democracy on trade is larger for the direct effect (trade output) or the indirect effect (trade policy).

3. DATA

The data used in this study are gathered from a variety of sources at the country level for the years 1970-2010. There are two main measures of trade used in this study. The first is a measure of trade output, which comes from the World Bank. It is the total merchandise trade, and it is computed as the sum of exports and imports as a percentage of GDP. The second measure captures the indirect effect of trade policy and regulations. This measure is taken from area four of the 2012 Fraser Institute's *Economic Freedom of the World Index* originally published by Gwartney, Lawson, & Block (1996). This fourth area captures the freedom of a country to trade

internationally. This measure is a simple average of four sub components: (i) tariffs, (ii) regulatory trade barriers, (iii) black market exchange rates, and (iv) controls of the movement of capital and people. It is available on a five year basis from 1970-2000, and it is available annually after that.

The main explanatory measure of interest is the Polity2 measure taken from the Polity IV index. Polity2 is a measure of the quality of the political institutions where -10 indicates a strongly autocratic country and 10 indicates a strongly democratic country. It measures the competitiveness and openness of elections, the degree of political participation, and the extent of checks on the executive. This is used as the primary measure of political institutions. In addition, a dummy for democracy is also utilized as an additional explanatory measure of interest, and it is also derived from the Polity IV index. In addition to the main measures of the dependent variable and explanatory variables, there are many control variables that must be considered.

Income data are measured by membership in the Organization for Economic Cooperation and Development (OECD). These data are gathered from the OECD website, which lists the OECD members and the date of membership. World Trade Organization (WTO) membership (formerly the GATT) is also gathered in a similar manner. These data are gathered from the WTO website, which lists the member country and the date it joined the GATT or the WTO if it joined more recently. Population size is gathered from the World Bank, which lists the population of more than 100 countries for the period of study from 1970-2010. Finally, additional measures are gathered for data on the capital stock and human capital of each country. These data are gathered from the Penn World Tables, version 08. All of these data are summarized in Table 1.

4. IDENTIFICATION STRATEGY

The hypothesis that democracy effects trade, and it has a differential, intertemporal effect is testable, and the form of the base equation estimated is specified as follows:

$$\ln T_{it} = \alpha + \beta P_{it} + X'_{it}\delta + \varepsilon_{it} \quad (1)$$

Where $\ln T_{it}$ indicates the natural logarithm of trade for a country i at time t . α , β , and δ are unknown parameters, and ε is the error term. The dependent variable, T , is a vector of trade output and trade protection. It is comprised of a measure of trade output, merchandise trade, which is defined as the sum of exports and imports as a percentage of GDP. This vector also includes a measure of trade restrictions taken from area four of the EFW index. This measure is the simple average of four sub-components: (i) freedom from tariffs, (ii) freedom from regulatory trade barriers, (iii) freedom from black market exchange rates, and (iv) freedom from the restriction of the movement of capital and people.

The explanatory variable of interest, P , contains two measures of political institutions. The first and main measure of political institutions is taken from the Polity2 variable from the Polity IV index. This measure is scored on a scale of -10 to 10 where -10 describes a complete autocracy and 10 describes a complete democracy. The second measure is a dummy, *Democracy*. It takes a value of 1 if the country's Polity2 score is positive, and it takes a value of 0 if its Polity2 score is negative. The former political institutional variable is much more descriptive because two countries may be classified as democracies in the latter but have completely different Polity2 scores. Therefore, the Polity2 measure will be the main measure utilized in this study, and the democracy dummy variable will be used as a check towards the robustness of the findings.

X is a vector of controls representing exogenous decision factors purported to influence trade protection and trade liberalization. The first explanatory variable that must be considered when analyzing the variation in trade is the level of economic development of a country. Higher income countries may trade more. However, one problem that is rarely addressed in this literature is the endogenous relationship between trade and income. Most studies include income, Real GDP growth, or log of GDP as an additional explanatory variable, but it is most likely true that trade also effects income leading to endogeneity issues that stem from reverse causality. As such, introducing an endogenous control variable may add more problems than it prevents. Therefore, this study utilizes a proxy for income, which is expected to control for the impact of income on trade without introducing any endogeneity. The proxy measure used in this study is a dummy for OECD membership. OECD or Organization for Economic Cooperation and Development serves the purpose of capturing the income effect of trade because higher income countries are generally part of the OECD whereas lower income countries are not. It also mitigates the endogenous relationship between income and trade because it is unlikely that trade causes OECD membership, thus avoiding potential reverse causality issues. ¹In addition to income measures, a few other control variables must be considered.

Trade agreement membership may also be an important determinant of trade because many countries are required to reduce trade barriers as a condition of joining the WTO (formerly the GATT). Membership in the WTO represents an ongoing agreement to open trade channels with other countries. Therefore, membership in these agreements are purported to influence trade. A movement from a 0 to 1 in the data for this study represents a country joining the WTO, and it analyzes its impact on trade over time. In addition to country membership, country characteristics such as demographic changes may affect international trade.

A country's size may be an important determinant of international trade through its geographical size (e.g., square miles or distance to trading centers) and the size of its population. However, the geography variables are all time-invariant measures, and fixed effects models involving a within-analysis framework drop all variables that are time-invariant and idiosyncratic to each country. Therefore, this study only adds the size of the population as a demographic determinant of trade. The geographical measures are built into the fixed effects model, *ceteris paribus*. It may be the case that large countries trade less (e.g. China and India) and small countries trade more (e.g. Hong Kong and Singapore). Controlling for population size also helps to analyze the impact of a growing population on trade within a country.

Mayer (1984) and Yang (1995) suggest that in a Heckscher-Ohlin world, the Stolper-Samuelson Theorem explains how individuals stand to gain or lose from changes in trade policy given their allocations of labor and capital. Developing countries have less capital than labor, and their trading partners tend to be more developed economies, which tend to be capital-intensive importing sectors. The high-skilled workers in capital intensive economies favor trade openness. Similarly, the low-skilled workers in labor abundant economies favor trade openness (Tavares, 2008; Jäkel & Smolka, 2013). Measures of human capital and physical capital are included as additional control variables and are taken from the Chinn-Ito Index (Chinn & Ito, 2006).

4.1 INSTRUMENTAL VARIABLES - CONTROLLING FOR REVERSE CAUSALITY

Some studies have suggested that in addition to democracy causing more trade, it may also be true that trade causes more democracy. The argument is as follows: countries that trade more with others, will end up adopting more customs and culture from their trading partners. Trade allows the free transmission of information and knowledge, with democratic institutions as no

exception. Therefore, it is a possibility that trade also predicts democratic liberalization. A few studies do support this view (Acemoglu & Robinson, 2006; Adsera & Boix, 2002; Boix 2003; Boix & Garicano, 2001; Eichengreen & Leblang, 2008; López-Córdova & Meissner, 2008). However, a recent review of the literature on international political economy and trade (Milner & Mukherjee, 2009) casts doubt on this view. They summarize the literature and find scant evidence towards the argument that trade causes more democracy. This is a view also shared by Yu (2010). One explanation for the lack of support is that trade may only facilitate democratic transitions in the absence of conflict. Galiani & Torrens (2014) develop a model that explains how coups can facilitate democratic transitions but only when the rival elite group possesses pro-trade preferences. López-Córdova & Meissner (2008) suggest another possibility. Their article finds that trade openness only facilitates democracy during the period from 1920-1980. Nevertheless, a good study takes all possible issues into consideration, and this study mitigates concerns of endogeneity by utilizing an instrument, *durable*, which is the measure of time a country has been consistently autocratic or consistently democratic. This measure is purported to be related to democracy but unrelated to trade.

The equation in model (1) now has an additional reduced form equation to be modeled in the first stage of the model. This reduced form model is specified as follows:

$$P_{it} = \gamma D_{it} + X'_{it} \delta + \varepsilon_{it} \quad (2)$$

where P is the measure of political institutions for a country i during time t . γ and δ are parameters to be estimated. The instrument, D , is the measure of durability of a country's political institution, which is taken from the Polity IV index. The set of covariates, X , is included in the second stage of the regression in (1), and it is also included in the reduced form model in (2). ε is the error term from the estimation.

In order for the instrument to be valid, it must satisfy two conditions: (i) the instrument must be relevant, and (ii) the instrument must satisfy the exclusion restriction. In addition, the instrument must also pass a few statistical tests for strength and validity. The relevant test statistics are reported in Table 2 and Table 3. Table 2 describes the relationship between democracy and trade under the assumption that the relationship is exogenous, and Table 3 examines this relationship under the assumption that it is endogenous. The strength and validity of the instrument is assessed in the next section.

5. RESULTS

The first result for the hypothesis that democracy impacts trade output can be found in Table 2. This table tests this hypothesis in three different time intervals: (i) 5 years, (ii) 10 years, and (iii) 20 years. Here, time intervals refer to the frequency of data collection. Because institutions take time to develop, it is more realistic to capture variation in democracy and trade over 5, 10, or 20 year periods rather than using annual data.

The dependent variable in Table 2, Trade output, is measured as the value of imports and exports as a percentage of GDP. Overall, there is a strong statistical relationship between democracy and trade using Polity2 as the measure of democracy in all six specifications, and the results suggest an interesting finding. Democracy and trade output are positively correlated and the impact of democracy on trade doubles from the short term (5 years) to the long term (20 years). Because the specification is log-linear, the coefficients can be interpreted as percentages on the left hand side of the equation. Therefore, a 1 point increase in Polity2 is associated with a 0.8% increase in trade in the short term and a 1.8% increase in trade in the long term. More

importantly, it emphasizes that the economic impact of democracy may take time to influence trade.

WTO and OECD membership exhibit positive relationships with trade, but their relationships are very fragile; the dummy variable, WTO, only rejects the null hypothesis at the chosen level of statistical significance ($p < 0.05$) in column 5, which analyzes the relationship between democracy and trade in twenty year intervals. Thus, joining the WTO may increase trade, but it increases trade over the long term.

Country size may also be a determinant of international trade. The results from Table 2 suggest that increasing a country's population is inversely related with trade output, but this is only true in 10 year intervals. There is no statistical relationship between population and trade in the short or long term.

In contrast to the previous control variables, capital stock maintains a positive and statistically significant relationship with trade in most of the specifications. An increase of 100,000 in the capital stock is associated with a 1.5% to 2.7% increase trade.

The measure of trade protection, EFW4, never exhibits a statistically significant relationship with trade. This is surprising due to the strong bi-variate correlation between EFW4 and Trade (33% in five year periods and 37% in 20 year periods). Therefore, this lack of a statistical finding suggests that most of the relationship between trade policy and trade output stems from differences between countries; while countries with fewer trade restrictions might have more trade than countries with more trade restrictions in a comparison between countries, the same result does not hold when analyzing reductions in trade restrictions and its impact on trade within countries. This lack of a finding suggests that much of the variation in trade protection can be explained through other factors idiosyncratic to each country.

Table 3 examines the relationship between democracy and trade under the assumption that democracy and trade are endogenously determined. This model takes advantage of an instrument, durable, which is correlated with democracy and uncorrelated with trade. In order for the instrument to be valid, it must satisfy two conditions: (1) The instrument must be relevant, and (2) the instrument must satisfy the exclusion restriction. We begin our discussion with the relevance assumption.

First, the instrument must be correlated with the explanatory variable of interest. For the instrument to be strong, it needs to be correlated with the endogenous regressor in the model (Polity2, EFW4). The instrument, Durable, is expected to be correlated with political institutions. Durable is measured as the number of years a country has retained its polity regime. If a country is a democracy but becomes an autocracy, the durable measure resets to zero. Likewise, if a country is an autocracy but becomes a democracy, its measure also resets to zero. Therefore, Durable is a measure of political stability.

Recall that Polity2 is measured on a scale from -10 to 10, and it captures many arrangements of political institutions on a continuum from complete autocracy to complete democracy. Generally speaking, countries that score highly on the Polity2 measure tend to always be democratic, i.e. complete democracies tend to consolidate and not risk democratic failure. Therefore, if a country has been a democracy for a long time, it is also likely the democratic score of the country will be very high.

Table 4 reports the bivariate correlation coefficients between the instrument, the dependent variable, and the explanatory variables of interest. Using conventional notation, Y denotes the dependent variable, X denotes the explanatory variables, and Z denotes the instrument. Each column in Table 4 reports the bivariate correlation coefficient between the

instrument and either one of the explanatory variables or the dependent variable for each time interval analyzed. The results in Table 4 suggest that the instrument is indeed correlated with the endogenous explanatory variables, and it is uncorrelated with the dependent variable, thus satisfying the relevance and exclusion restrictions. For instance, the correlation between the instrument and the dependent variable is roughly -0.02% in all three time intervals analyzed. This lends credence towards the exclusion restriction due to the low correlation between the dependent variable and the instrument. In addition, the instrument exhibits a moderate correlation with each of the explanatory variables; the correlation between *Durable* and *EFW4* is 38%, 39%, and 39% in the 5 year, 10 year, and 20 year samples, respectively. The correlation between *Durable* and *Polity2* is 31%, 31%, and 32%, in the 5 year, 10 year, and 20 year samples, respectively. However, this is only a rudimentary analysis of the strength of the instrument, but the findings help validate the use of the instrument in the study.

Second, the instrument must also satisfy the exclusion restriction. This means that the instrument should satisfy three conditions: (i) it should not directly affect the dependent variable, (ii) it should only affect the dependent variable through the endogenous variables, and (iii) it should not be correlated with omitted variables in the model (the error term, ϵ). One preliminary method of determining whether an instrument satisfies the exclusion restriction is to specify the model being tested and include the instrument as an additional explanatory variable. In this case, this means to run a regression analyzing how democracy affects trade and include the instrument, *durable*, as an additional covariate. If the addition of the instrument does not increase the goodness of fit, or if it does not possess any statistical power, then one can conclude that the instrument satisfies the exclusion restriction. The results from this analysis are reported in Table 5, and they suggest that the exclusion restriction is satisfied. Thus far, the instrument, *Durable*, has

satisfied the rudimentary tests for the relevance and exclusion restrictions. The next step is to undertake more formal tests for weak instruments.

One such test is advocated by Staiger & Stock (1997). They suggest that a first stage F statistic less than 10 indicates a weak instrument. The first stage F statistic in Table 3 is usually around 20 and is only as low as 17 in column (4). These first stage F statistics are statistically significant and exceed 10. Therefore, the instrument passes the first rule of thumb provided by Staiger & Stock (1997). However, as Cameron & Trivedi (2010) suggest, this rule of thumb is ad hoc and may not be conservative enough when there are many overidentifying restrictions. Because there is only one instrument utilized in this study, the instrument is just identified, and there is no need to worry about overidentifying restrictions. Nonetheless, one reasonable argument could suggest that this rule of thumb is not enough to verify the strength of an instrument.

An alternative guideline for assessing the strength of instruments is to follow the advice put forth by Stock & Yogo (2005). Their guidelines provide more flexibility on the minimum value of 10 for the first stage F statistic. According to Table 2 in Stock & Yogo (2005), an equation just identified with $n=1$, $r=0.10$, and $K=1$, yields a critical value of 16.38. Here, n refers to the number of endogenous explanatory variables, r refers to the desired maximum size of a 5% Wald test, and K refers to the number of instruments. Therefore, if the critical value in our estimation exceeds the critical value of 16.38, we can have more confidence that the instrument is strong. The Cragg-Donald Wald F statistic is used as a benchmark for comparison to the critical values in Table 2 of Stock & Yogo (2005). The Cragg-Donald Wald F statistic ranges from 153-195 in the 5 year sample, 57-82 in the 10 year sample, and 26-43 in the 20 year sample in Table 3. Therefore, this test suggests that the instrument is strong in all three samples.

In summary, all four weak instrument tests have rejected the null hypothesis that the instrument is weak. The correlation table (Table 4) suggests that the instrument is relevant. Table 5 suggests that the instrument satisfies the exclusion restriction due to the statistical insignificance of including the instrumental variable in the second stage regression. Furthermore, the minimum first stage F statistic benchmark provided by Staiger & Stock (1997) is satisfied, and the Cragg-Donald Wald F statistic exceeds the critical value of 16.38 as suggested by Stock & Yogo (2005). The specifications provide a sizeable goodness-of-fit, as measured by the F test, which captures the joint significance of the model. Now that we can be reasonably confident that the instrument is strong, the results in Table 3 can be analyzed in more detail.

The results do change slightly under the assumption that democracy and trade are endogenously related in Table 3. Democracy is no longer statistically related to trade in either five or ten year intervals, though the p-value in column (3) is 0.054, which is enough to reject at the 10% level for a two-tailed test but not enough to reject at the 5% level. However, in contrast to the 5 and 10 year intervals, democracy remains related to trade in twenty year periods. In addition, modeling this endogenous relationship exhibits a much larger economic effect of democracy on trade. Previously, the twenty year interval specification suggested that increasing Polity2 by 1 unit is correlated with a 1.8% increase in trade. After controlling for potential endogeneity, this economic effect increases in size such that a 1 unit increase in Polity2 is now associated with a 3% increase in trade over twenty years. Therefore, the results in Table 3 in conjunction with Table 2 suggest that democracy is positively associated with trade, and the economic effect of democracy on trade is largest in the long term.

Similar to the previous specifications, WTO and OECD memberships exhibit statistical but fragile effects on trade, although the effects on trade are more robust than exhibited

previously. OECD membership is only statistically related with trade in a five year period, and only in the specification that excludes trade policy as a determinant of trade output. In contrast, WTO membership is only related with trade in a twenty year interval.

Table 6 switches the focus from the direct effect of democracy on trade towards the indirect effect; democracy may affect trade policies, which effect trade output. In contrary to the direct measures, there is much less evidence towards the efficacy of democracy in reducing trade barriers. The one exception is the short term. Using five year intervals, the estimate from column 1 of Table 6 suggests that democracy is associated with a reduction in trade restrictions. This corroborates the view that democracy possesses a statistically significant and inverse relationship with trade restrictions (Harrigan, 1993; Learner, 1988; Rodrik, 1994; Treffler, 1993) because larger numbers in the EFW index suggest freedom from trade restrictions. However, this result is very fragile as it does not retain statistical significance when estimating the relationship in longer time intervals and under the assumption that the relationship is endogenous. Still, the results may suggest that the indirect and direct effect of democracy work in opposite directions. Taken together, the results suggest that democracy reduces trade restrictions in the short term, and it increases trade amounts in the long term. Therefore, the adage that institutions take time to develop may be especially useful here.

Table 7 repeats these exercises using an alternative explanatory variable as a robustness check. This variable, Democracy, is a dummy with a value of 1 if a country has a Polity2 score that is positive, and a 0 if a country has a Polity2 score that is negative. Using this alternative definition is less precise than using actual Polity2 measures, but it helps to assess the robustness of the results. In addition, this measure allows one to gauge the economic magnitude of democratization in terms of trade output. For instance, Mansfield, Milner, & Rosendorff (2000)

find that regime type matters for trade; trade between an autocracy and democracy is 15% lower on average than trade between a pair of democracies or autocracies. Eichengreen & Leblang (2008) find that democracy increases trade using a dichotomous measure similar to the one used in this study. Therefore, this alternative measure should serve its purpose as a robustness check and help ascertain the economic effect of regime change.

The results in Table 7 suggest that the previous results were not merely coincidence; the estimation using this alternative explanatory measure of political institutions supports the previous findings. That is, democracy is positively associated with trade output in all three specifications, its economic magnitude increases over time, and the results are stronger in the long term than in the short term under the assumption that trade and democracy are endogenously determined.

The variable, *Democracy*, possesses a positive and statistically significant relationship with trade output in each OLS specification and in the twenty year interval period when using IV methods. The coefficient, 0.50, in column (6) suggests that if a country changes from an autocratic regime to a democratic regime, it will experience a 50% increase in trade over twenty years, *ceteris paribus*. This is a larger effect than in the five or 10 year period of study where democratization leads to a 25% and 30% increase in trade, respectively. A more conservative OLS estimate suggests that democratization leads to an 19% increase in trade over a twenty year period, under the assumption that democracy and trade are determined exogenously. Either way, democratization leads to a sizeable increase in trade over the long term.

As tested previously, the instrument, *Durable*, passes the weak instrument tests when the alternative explanatory measure, *Democracy*, is utilized in Table 7. The first stage F statistic

always exceeds 10 (Staiger & Stock, 1997), and the Cragg-Donald Wald F statistic exceeds the critical value of 16.38 (Stock & Yogo, 2005).

6. DISCUSSION

The main results from this analysis are two-fold: (1) democracy matters for trade but it matters more in the long term, and (2) democracy impacts trade directly but not very much indirectly through trade protection. Democracy only impacts trade protection in the short term.

There are a few reasons why democracy may take time to affect trade. First, democratic reforms work through multiple channels. Democracy could reduce conspicuous trade barriers, but it may also simultaneously increase less transparent trade barriers (Kono, 2006). Assuming that the conspicuous trade barriers are reduced more than the obfuscated trade barriers increase, there is a net increase in trade liberalization. Even under this assumption, it may take time for democracy to work through the channel of trade policy and then through actual trade outcomes. Democracy and trade is not the first relationship where time is of central importance.

Rode & Gwartney (2012) discuss how democratization takes time to influence market liberalization. However, they find that democratization leads to greater increases in economic freedom in the short run and lesser increases in the long run. Similarly, Rock (2009) finds that democratization leads to an increase in corruption in the short run and a decrease in corruption in the long run. Both of these studies identify a period of 10-12 years as their turning points. Therefore, this study also contributes to this literature by providing evidence towards the long run effect of democracy on trade.

The results from this study suggest that democratic reforms affect trade policy in the short term and then trade output in the long term. Most democratic reforms do not occur over time, and there is much experimentation through trial and error. Further complicating the issue, there is always a risk for democratic failure. Assuming that democratic reforms do pass and begin to persist, it takes time for their effects to be felt in the economy. This study suggest the largest effects are felt in the long term after democratic reforms have had time to stick (Boettke et al., 2008).

7. CONCLUSION

This study addresses two important questions: (1) How does democracy affect trade *over time* and (2) does democracy affect trade output when trade restrictions are taken into consideration? The key findings in this study suggest that democracy does affect trade output, even after controlling for differences in trade policies. Using a panel of more than 100 countries from 1970-2010 suggests that democracy affects trade, but its effect is much larger in the long term. Thus, the economic effects of democracy can be felt much more over time.

These results are robust to a wide set of fragility checks including alternative democracy measures, inclusion of trade restriction measures as control variables, and controls for potential endogeneity stemming from reverse causality. When assessing magnitudes, the results suggest that an increase of 1 unit in the Polity2 measure results in a 3% increase in trade over a twenty year period, even assuming that the relationship between trade and democracy is endogenous and making the correct adjustments. This effect is three times the size of the impact of democracy on trade in the short term. Similarly, the results from the alternative measure of democracy suggest that democratization leads to a 50% increase in trade over twenty years.

One extension to the present study may assess the long term impacts of democracy on trade between similar countries, either in terms of economic development or based on various regions of the world. It may be the case that democratization may foster growth in trade between democracies or between closely located trade partners, and an augmented gravity model would allow for the estimation of democratic similarity on trade.

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¹ Including GDP per capita as an additional control variable as other studies have done does not alter the results.