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TRADE LIBERALIZATION AND INSTITUTIONAL DEVELOPMENT*

Abstract

Recent research shows that the majority of cross-national variation in institutions is related to history. The within variation however is somewhat less explored. We find that the within variation in economic institutions can be explained by trade liberalization. This relationship is robust with various indicators of liberalization, in different sub-samples, and to the inclusion of additional covariates. Short-run trade liberalization appears to be more important than long-run trade liberalization. This may be indicative of a short-term trade liberalization induced shift in the long-run institutional equilibrium. We also find that the country fixed effects are highly correlated with settler mortality and other historical variables. This is consistent with recent theoretical developments in the political economy literature and with the 'critical juncture' view of history.

JEL Classification: P16; O10; F13

Keywords: Trade Liberalization; Institutions; Economic Development

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I. Introduction

A growing number of economists working on comparative development identify institutional quality as an important cog in the economic success of a country. The works of Knack and Keefer (1995), Hall and Jones (1999), Acemoglu et al. (2001, 2002), Rodrik et al. (2004), Easterly and Levine (2003), Bhattacharyya (2008), and many others are all supportive of this view. Acemoglu et al. (2001) in particular argue that the differences in current institutional quality across nations can be traced back to its colonial origin. In brief, their story is the following. The Europeans resorted to different style of colonization in different parts of the world depending on the feasibility of settlement. In tropical climate the mortality rate among European colonizers were extremely high which prevented them from settling there and they erected extractive institutions. Whereas, in temperate climate the mortality rate among colonizers were low which made them ideal for settlement and they erected strong institutions in these settlements. These institutions persisted over time and they continue to influence the current institutional and economic performance of these countries. This they find is consistent with the well-established view in political science, which shows that events during critical historical junctures can lead to extremely divergent political-economic outcome in the long run (see Acemoglu et al., 2007a, b).[1] Without doubt this is an important empirical finding. But the fact that we occasionally do notice improvements in institutional quality due to good policy suggests that good institutions are not entirely determined by history. A good illustration of this is perhaps post-independence India. India inherited relatively good institutions from the British in 1947. A democratic polity, an independent judiciary, and secure property rights were among many other

[1] Acemoglu et al. (2001, 2002) identify European colonization of other continents around 1500 as one such critical juncture in modern history.

positives that were enshrined into the constitution of independent India. High scores in executive constraint (consistently around 7) and democracy (consistently around 9) from Polity data during the 1950s is indicative of the fact that the institutions were strong at least on paper. India also embarked on an import substituting industrialization policy during this time relying on high tariff and quantitative restrictions to prevent imports. This lead to the well-known problem of 'rent-seeking society' (see Bhagwati and Desai, 1970; and Krueger, 1974). As a consequence of the widespread culture of rent-seeking and bad policy good institutions on paper often yielded poor institutional outcomes over the next three decades. A quick comparison of the Polity score (which measures institutions on paper) and the ICRG score (which measures institutional outcome) during the 1982–1997 support this view.[2] The Polity executive constraint index remained consistently at 7 throughout the period. In contrast the ICRG expropriation risk index was as low as 6 in 1982 when the import licensing system was fully operational and it became as high as 10 in 1993 and thereafter when India liberalized its economy.[3]

It is a widely accepted view in the literature that the majority of the cross-country variation in institutional quality can be traced back to its historical origin (see Hall and Jones, 1999; La Porta et al., 1999; Acemoglu et al., 2001, 2002; Rodrik et al., 2004; Easterly and Levine, 2003; and many others). The within variation however is somewhat less explored. Our objective in this paper is to shed some light on the possible effect of liberalization on institutional quality from 'within country' perspective. We do this by exploiting the time dimension in the data. We use panel data across countries from the 1980s to the 2000s. In brief, our major findings

[2] In both the Polity and the ICRG indices, higher score signify better institutional quality. For details refer to the data appendix.

[3] India liberalized its economy in 1991 and the positive effect on expropriation risk started to show in 1992 when the index score jumped from 6.2 to 8.2.

are as follows. First, we show that trade liberalization improves the quality of economic institutions (property rights institutions, contracting institutions, and regulatory institutions to be more specific). This relationship holds with various indicators of trade liberalization, in different sub-samples, and is robust to the inclusion of additional covariates. Second, short-run impact of trade liberalization appears to be more important than the long-run impact. This may be indicative of a short-term trade liberalization induced shift in the long-run institutional equilibrium. Third, we find that the country fixed effects are highly correlated with log settler mortality, log population density in 1500, and the fraction of population speaking English (ENGFRAC) which is consistent with the well-established 'critical juncture' view of history in political science. However history is not the only factor influencing cross-country variation in institutions as religion and latitude also seems to have a role. The first and the second results are entirely new and to the best of our knowledge there are no comparable empirical studies of the effects of trade liberalization on property rights, contracting, and regulatory institutions. The third is a confirmation of recent findings by Acemoglu et al. (2007a, b).

Our results are consistent with the theories propounded by North (1981), Rogowski (1989), Acemoglu et al. (2005), and Acemoglu and Robinson (2006). North (1981) emphasizes the role of market size and technology in engendering institutional change over time. It is widely accepted that both market size and technology are influenced by trade (see Smith, 1776). Hence trade can bring about institutional change. Rogowski (1989) show that trade affects domestic political alignments through changes in factor prices. Acemoglu et al. (2005) show that trade induces institutional change by strengthening commercial interests. Acemoglu and Robinson (2006) show that trade induces institutional change through the transfer of skill-biased technology which increases the income share of the middle class. The results are also

complementary to Hall and Jones (1999), La Porta et al. (1999), Acemoglu et al. (2001, 2002), Rodrik et al. (2004), Easterly and Levine (2003), and many others who find evidence in favor of the historical origin of institutional divergence across countries (also known as the 'critical juncture view'[4]).

The remainder of the paper is organized as follows. Section II discusses the theoretical motivation. Section III introduces the empirical strategy. Section IV discusses the data. Conceptual challenges associated with measuring institutions and trade liberalization are also discussed. Section V presents the results and Section VI concludes.

II. Theoretical Motivation

The theoretical literature on institutional change over time perhaps originates from North (1981). North (1981) emphasizes that a change in per capita capital stock due to population growth and technological progress brings about institutional change over time. What North (1981) does not mention is the impact of international trade on population and technological progress. International trade increases the size of the market which is equivalent to an increase in the size of domestic population (see Smith, 1776). It is also a widely accepted view that trade induces technological progress via technology transfer (see Romer, 1990; Coe and Helpman, 1995). Therefore, potentially engagement in international trade can bring about institutional change in a country. In a related research Rogowski (1989) also shows that trade affects domestic political alignments through changes in factor prices. He however does not focus on the impact of trade on institutions.

[4] The critical juncture idea has been central to a big literature in political science and historical institutionalism (see Gerschenkeron, 1962; Moore, 1966; Ertman, 1997; and many others). For a detailed survey of this literature see Ikenberry (1994).

Acemoglu et al. (2005) documents historical evidence in favor of the trade induced institutional change view. Their hypothesis however is different from North's (1981) capital stock theory as they focus on trade's impact on the distribution of political power and subsequent institutional change. They show that Western Europe's engagement in Atlantic trade induced institutional change by strengthening commercial interests which resulted into rapid economic growth in countries where the initial political institutions were non-absolutist.

In a related research, Acemoglu and Robinson (2006) show that trade induced transfer of skill-biased technology increases the income share of the middle class. This increases their political power relative to the rest of the society and they impose checks and balances on the existing institutions to protect their property rights and contracts. With a larger share of income, the powerful middle class also favor taxation which is less redistributive. This makes the elite more willing to accept the checks and balances on institutions imposed by the middle class.

Without doubt there is enough theory floating around to believe that trade liberalization does have an impact on institutions. The key issue however is how much of it is supported by the data. Bearing that in mind, we focus on the question whether trade liberalization can explain within variation in three types of economic institutions namely property rights, contracts, and regulation. The motivations behind choosing property rights, contracting, and regulatory institutions as our dependent variables are two fold. First, the empirical literature to date has focused more on the impact of liberalization on corruption and political institutions (democracy).[5] Property rights institutions, contracting institutions, and regulatory institutions

[5] Some of the influential papers on trade and corruption are Krueger (1974), Ades and Di Tella (1999), Giavazzi and Tabellini (2005), and Wei (2000). Research on trade and democracy is due to Giavazzi and Tabellini (2005) and Persson (2005).

have received relatively less focus. Second, recent evidence shows that different institutions affect economic performance differently and these three institutions are crucial to the economic performance of a country (see Rodrik, 2000a; Djankov et al., 2002; Acemoglu and Johnson, 2005; Bhattacharyya, 2008). Hence they are extremely important from a policy perspective.

III. Empirical Strategy

We use panel data which covers 105 countries from the 1980s to 2000s. Due to data limitations, not all specifications cover 105 countries and in most specifications, the panel is unbalanced. Our basic specification uses five year averages of institutions, trade liberalization and other control variables between 1980 and 2000. To uncover the relationship between institutions and trade liberalization we estimate an equation of the form:

$$INS_{srt} = \alpha_s + \beta_t + \gamma_1 po_{srt} + \phi_1 y_{srt} + \phi_2 (y_{srt})^2 + \theta INS_{srt-5} + \mathbf{X'_{srt}}\mathbf{\Lambda} + \varepsilon_{srt} \qquad (1)$$

where INS_{srt} is a measure of institutional quality in country s in region r averaged over years $t-4$ to t, α_s is a country dummy variable controlling for country fixed effects, β_t is a year dummy variable controlling for time varying common shocks, po_{srt} is trade liberalization measured by Sachs and Warner openness index in country s in region r averaged over years $t-4$ to t, y_{srt} is income per capita in country s in region r averaged over years $t-4$ to t, and $\mathbf{X_{srt}}$ is a vector of other control variables. The lagged value of institutions, INS_{srt-5}, is to capture the persistence and mean-reverting dynamics[6] in institutions. We use three types of institutions: property rights institutions measured by ICRG expropriation risk; contracting institutions

[6] Mean reverting dynamics is defined as the tendency of institutions scores of a particular country to return to an equilibrium value for that country.

measured by ICRG repudiation of contracts; and regulatory institutions measured by Gwartney and Lawson's (2005) index.

The main variable of interest is po_{srt} and therefore γ_1 is our focus parameter. We expect γ_1 to be positive and statistically significant. However it is not straightforward to interpret γ_1 as a causal effect. One can list the following major challenges that the estimate has to overcome to be interpreted as a causal effect.

- *Measurement error*. The Sachs and Warner index, other measures of trade liberalization, and the measures of institutional quality are likely to be noisy. A positive error in the institutional quality measure would create a downward bias in the estimate of γ_1. This is quite likely in the presence of a 'halo effect' in the institutions data.
- *Endogeneity*. Endogeneity or two way causality is a common concern in an analysis of this nature. As it is possible that trade liberalization improves institutional quality, it is also possible that causality runs in the opposite direction. This will inflate the estimate of γ_1.
- *Omitted variable bias*. Many of the omitted time invariant deep factors (culture, ethnic makeup, religion, climate) influencing institutional quality can be correlated with trade liberalization and will bias the estimate of γ_1 upwards.

Even though the biases work in opposite directions, one can never be sure that they nullify each other. A standard response in the literature under these circumstances is to search for a valid instrument for trade liberalization to get a consistent estimate of γ_1. This however is a challenge in itself as good instruments are hard to find. We adopt some alternative strategies instead. First,

we estimate our model using the fixed effects estimator. Fixed effects estimator does well in terms of tackling omitted variable bias as it eliminates the effect of country specific unobserved heterogeneity. However, it brings in some additional problems. Fixed effects estimator is biased in presence of a lagged dependent variable as regressor.[7] Furthermore, if there is a positive correlation between po_{srt-5} and ε_{srt-5} then the fixed effect estimate of γ_1 is biased upwards (see Wooldridge, 2002). It is also unable to tackle the bias due to endogeneity. It only works well under the restrictions $|\theta| < 1$ and $t \to \infty$. Under these restrictions the upward bias in the fixed effect estimator can be minimized. But this is unlikely in our case as we are operating with a short panel $(t = 3)$. In a situation like this, the literature generally adopts the Arellano-Bond GMM approach. The argument is that the Arellano-Bond GMM estimator uses lagged changes of endogenous variables as instruments and controls for unobserved heterogeneity and hence are able to produce a consistent estimate of γ_1. If the instruments jointly pass the Hanson test of heterogeneity and the second order autocorrelation (AR(2)) test then the estimate of γ_1 is not biased due to endogeneity. In case of the model with property rights institutions and the model with contracting institutions we have a short panel $(t = 3)$. Hence our instruments are valid if they pass the Hanson test and they are correlated with the suspected endogenous variables.

We use alternative trade liberalization measures from Wacziarg (2001), which is trade share predicted by policy, to check the robustness of our main result. These estimates also suggest a positive effect. We also look at the effect of long-run trade liberalization PO_{srt} on institutions in Table 6. PO_{srt} is defined as the fraction of open trade policy years in country s in

[7] In this case, INS_{srt-5} is mechanically correlated with ε_{srt-5k} for $k = 1, 2$ and the fixed effect estimator is not consistent.

region r since 1950 until year t.

IV. Data

We use expropriation risk, risk of repudiation of government contracts, and Gwartney and Lawson's regulation index as measures of property rights institutions, contracting institutions, and regulatory institutions respectively. The motivation is to go beyond the frequently used "cluster" of institutions measures. According to North (1981), Rodrik (2000a), and Acemoglu and Johnson (2005), a measure of property rights institutions should capture the performance of institutions that constraints government and elite expropriation of private property; a measure of contracting institutions should capture the performance of institutions that supports private contracts; and a measure of regulatory institutions should capture the performance of institutions that prevents market failure. We try to follow these definitions while selecting our measures.

We use expropriation risk from the International Country Risk Guide (ICRG) published by the international agency Political Risk Services as our measure of property rights institutions. The measure ranges from 0 to 10 where a higher value indicates a lower probability of expropriation of private property by the state and hence better quality institutions. There are other measures of institutions (rule of law index, executive constraints etc.) used in the literature. However, none of these measures are close to Douglass North's notion of good property rights institutions. North defines good property rights institutions as those that provide checks against expropriation by the government and other politically powerful groups (see North, 1981; pp. 20-27). Expropriation risk is perhaps the closest to North's definition as it captures the notion of extractive state. Furthermore, many previous studies have used this measure (see Knack and Keefer, 1995; Acemoglu *et al.*, 2001; Acemoglu and Johnson, 2005; Bhattacharyya, 2008; and

many others). Hence we use expropriation risk as our measure of property rights institutions. The data covers 125 countries and we notice that the ratio of within to between variations is approximately 79 per cent which is indicative of a significant within variation in the data relative to between variation.

Contracting institutions are defined as the rules and regulations that govern contracts between ordinary citizens, for example, between a creditor and a debtor or a supplier and a buyer (see Acemoglu and Johnson, 2005). Ideally one should use a measure of contract enforcement between private citizens. Djankov et al. (2002) legal formalism index is one such measure. This measure is also used by Acemoglu and Johnson (2005). But unfortunately this measure is only available in a cross-section. As an alternative we use the risk of repudiation of government contracts from ICRG which is available in a panel.[8] Repudiation risk measures contract enforcement between the government and a private citizen and hence admittedly not an ideal measure. However, we would expect the contracting environment between the government and a private citizen to be correlated with the contracting environment among private citizens. The measure operates on an eleven point scale ranging from 0 to 10 with a high score implying better contracting institutions. The data covers 125 countries and the ratio of within to between variations is approximately 62 per cent.

A major conceptual challenge in separately measuring property rights institutions and contracting institutions is the issue of potential overlap. Both institutions are put in place to control opportunistic behavior of an agent or a group. The overlap is perhaps reflected by the high correlation (of the order of 0.91) between the two measures reported in Table 2. However, there are significant differences as well. Contracting institutions are contracts between two

[8] This measure is also used by Knack and Keefer (1995).

private citizens or a state institution and a private citizen. Therefore, if contracting institutions fail, it is possible to write an alternative contract. In contrast, property rights institutions are the contract between the state and the ordinary citizens as a group and depend on the distribution of political power between the two. Hence it is difficult to write an alternative contract when property rights institutions fail (see Acemoglu and Johnson, 2005). However, having mentioned the significant differences between these two institutions we also remind the reader that our analysis do not successfully resolve the issue of potential overlap.

We define regulatory institutions as the rules that prevent anti-competitive behavior of the firms, highly regulated credit market, and a labor market dominated by centralized bargaining.[9] Coming up with the measure that covers all three aspects of regulation is challenging. The Gwartney and Lawson's regulation index fortunately covers all three aspects and hence is suitable for our purpose. The measure ranges from 0 to 10 with a high score implying fewer regulations. The data covers 107 countries and the ratio of within to between variations is approximately 71 per cent.

The trade liberalization measure is from Sachs and Warner (1995). The index runs from 1950 to 1990. Wacziarg and Welch (2003) data is an update of Sachs and Warner (1995) and they extend the index till 2000. We use the Wacziarg and Welch (2003) updated figures for the 1990s. The Sachs and Warner index classify a country as not liberalized if any of the following conditions apply: (i) Its average tariff rate on imports of capital or intermediate goods is above 40 percent; (ii) Its non tariff barriers cover 40 percent or more of its import of capital and intermediate goods; (iii) Its black market premium is 20 percent or more; (iv) It has a socialist

[9]Rodrik (2000a), Rodrik (2005), and Bhattacharyya (2008) use a similar definition of regulatory institutions.

economic system; (v) It has a state monopoly on major exports. This index suits our purpose as it covers all aspects of trade liberalization. Using this index we create a short-run and a long-run measure of trade liberalization. The short-run measure is the fraction of years a country has remained liberalized in the last five years. The long-run measure is the fraction of years a country has remained liberalized from 1950. The ratio of within to between variations in the short-run measure is approximately 109 per cent. In contrast, the ratio of within to between variations in the long-run measure is approximately 53 per cent

Recently, the Sachs and Warner liberalization index has been criticized by Rodriguez and Rodrik (2000) as they show that the index suffers from measurement problems.[10] However, this index has been used by several recent studies (see Alesina and Dollar, 2000; Wacziarg, 2001; Wacziarg and Welch, 2003; Easterly et al., 2003; Giavazzi and Tabellini, 2005; Persson, 2005; Hausmann et al., 2005) as a measure of trade liberalization or economic liberalization. We use the Sachs and Warner index because of its wide coverage (both cross-section and time series) and easy availability. We also use an alternative measure of liberalization from Wacziarg (2001) and our results are robust.

Another frequently raised point in the empirical literature on trade and development is the possibility of using trade volume or the deviation between observed trade volume and predicted free trade volume as a proxy for trade liberalization. However, these measures are not free from limitations and are only imperfect proxies of liberalization (Wacziarg, 2001). In comparison, the

[10] Rodriguez and Rodrik (2000) show that the index is dominated by black market premium and state monopoly in exports which are not necessarily trade related. However, Warner (2003) updates the index and comes up with a reply arguing that these factors are trade related.

Sachs and Warner index appears to be superior in capturing trade liberalization (Wacziarg, 2001).

The other measures used are income per capita from Penn World Table 6.1, legal origin from La Porta et al. (1999), schooling from Barro and Lee (2000), inequality from Deininger and Squire (1996), foreign aid and FDI data from the World Bank, log settler mortality from Acemoglu et al. (2001), log population density in 1500 from Acemoglu et al. (2002), and ENGFRAC, EURFRAC from Hall and Jones (1999). Data appendix reports all the variable definitions and Table 1 reports descriptive statistics of the major variables.

V. Evidence

This section systematically tests whether trade liberalization leads to institutional development. First, we present our basic results and then we conduct several robustness tests.

A. Basic Results

Tables 3 – 7 present the basic results. Table 3 deals with trade liberalization and property rights institutions and reports estimates of γ_1. In column (1) we solely focus on the partial relationship between short-run trade liberalization and property rights institutions. A one standard deviation increase in trade liberalization in an average country improves the quality of property rights institutions by 0.3 standard deviation and the effect is statistically significant. This estimate however is not reliable as we ignore the effect of per capita income and past institutions on current institutions which can also be correlated with trade liberalization. Therefore, the estimate is perhaps showing an inflated effect. In column (2) we control for the effect of per capita income however the possibility of a bias remains from other omitted sources. In column (3) we add lagged institutions as an additional control which is likely to capture institutional persistence and mean reverting dynamics. This brings in issues of endogeneity

which is likely to bias the estimate of γ_1. In column (4) we try to tackle the omitted variable problem by controlling for country fixed effects. The positive relationship between trade liberalization and property rights institutions survives. The magnitude of the coefficient however increases by more than two fold. This is indicative of an upward bias in the fixed effects estimate in the presence of a lagged dependent variable (Wooldridge, 2002). In this situation the Arellano-Bond GMM estimator is the appropriate way forward as it yields consistent estimates. Column (5) reports the Arellano-Bond GMM estimates. The estimate of γ_1 is positive and smaller than the fixed effects estimate indicating that it eliminates the bias. A one standard deviation increase in short-run liberalization index leads to approximately two fifth of a standard deviation increase in the quality of property rights institutions. To put this into perspective, the model explains 46 per cent of the actual within variation in property rights institutions in India due to a 0.8 increase in trade liberalization over the period 1990 to 1995. For t=3, this estimator is equivalent to pooled 2SLS and hence the AR(2) test is not reported. The AR(1) test and Hanson test p-values suggest that the instruments are correlated with the suspected endogenous variables and uncorrelated with the error term and hence they are valid. In column (6) we look at the time effects of trade liberalization on property rights institutions. The effects are significant only after 1990 however F-test shows that they are jointly significant over the entire period.

In Table 4 we examine the effect of trade liberalization on contracting institutions. Column (1) reports the partial relationship between trade liberalization and contracting institutions and column (2) reports the relationship when we control for per capita income. In column (3) we add $CONINS_{srt-5}$ and the estimate of γ_1 is positive and statistically significant. In column (4) we control for country fixed effects to tackle omitted variable bias. The positive and statistically significant estimate of γ_1 survives. Column (5) reports the Arellano-Bond GMM

estimate of γ_1. This is our preferred estimate as it is consistent. The partial effect of a one standard deviation increase in trade liberalization is more than one quarter of a standard deviation increase in the quality of contracting institutions. To put this into perspective, the model explains 37 per cent of the actual within variation in the quality of contracting institutions in India when the trade liberalization index went up by 0.8 during the period 1990 to 1995. The instruments are valid as they pass the Hanson test and the AR(1) test. In column (6) we look at the time effects of trade liberalization on property rights institutions. Similar to Table 3, these effects become significant only after 1990 however F-test shows that they are jointly significant over the entire period.

Table 5 examines the effect of trade liberalization on regulatory institutions. Column (5) reports our preferred Arellano-Bond GMM estimate of γ_1. The estimate is statistically significant and a one standard deviation increase in trade liberalization explains more than one third of a standard deviation increase in the quality of contracting institutions. To put this into perspective, the model explains one fifth of the actual within variation in the quality of contracting institutions in India when the trade liberalization index went up by 0.8 during the period 1990 to 1995. Column (6) examines the time effects of trade liberalization on regulatory institutions and we notice that the effect of liberalization is predominant in 1990 and 1995. It is statistically insignificant in 1985 and 2000. However the effect is jointly significant across time.

Table 6 deals with a related question. Is this effect due to long-run trade liberalization? To capture this effect we look at the relationship between long-run trade liberalization (PO_{srt}) measured by the fraction of years a country has remained liberalized from 1950 and institutions. Column (1) reports our preferred estimates for property rights institutions (same as column 5, Table 3). In column (2) we add PO_{srt} into the specification. We notice that PO_{srt} is statistically

insignificant but po_{srt} comes out to be the winner. It registers a positive effect and the magnitude of the coefficient is similar to our preferred estimate in Table 3 (also in column 1). In columns (3) & (4) we repeat the exercise for contracting institutions. po_{srt} continues to be significant and PO_{srt} is statistically insignificant. Like columns (1) & (2), we notice very little change in the magnitude of the estimate of γ_1. Finally, in column (6) we analyze the effect of PO_{srt} on regulatory institutions. The effect is negative and only marginally significant.

In Table 7 we estimate the effect of history on the time invariant component of institutions. There exists a strong view in political science and the historical institutionalism literature that institutions across countries diverged due to a common shock (but of variable nature) at a critical juncture in history (see Gerschenkeron, 1962; Moore, 1966; Ertman, 1997). In columns 1 – 3 we examine the effect of historical variables on the fixed effect from the regression reported in column (4) of Table 3. The rationale is that the fixed effect captures the fixed time invariant component of property rights institutions and the historical variables capture global shocks at critical junctures in history. If we find correlation between the two after controlling for other factors then we can conclude that the critical juncture theory explains a part of the cross-national variation in institutions. However, there is a caveat. The fixed effects from our fixed effects regression in column (4) of Table 3 are not consistently estimated and hence these results can only be interpreted as suggestive of a general pattern.[11] In column (1) we notice that historical variables (log settler mortality, log population density in 1500, ENGFRAC) used in the literature are statistically significant. Log settler mortality and log population density in 1500 register negative effects on the fixed effects whereas ENGFRAC register a positive effect. In column (2) we add an additional historical variable. A dummy capturing whether a country

was a colony anytime during the period 1900 to 1950. But this variable is not significant. In column (3) we include a large number of other control variables (ethno-linguistic and religious fragmentation, latitude, fraction of Catholic, fraction Protestant, fraction Muslim, fraction Buddhist, fraction Hindu, fraction Confucian, and fraction Jew). We find that the adjusted R^2 improves significantly (from 0.62 to 0.92) indicating a better fit. Log settler mortality, EURFRAC, and colony in 1900 – 1950 are not significant individually but all the historical variables are jointly significant (indicated by the history F-test p-value). We find that latitude has a positive and statistically significant effect which implies being further from the equator exhibits better property rights institutions. This is consistent with the findings of La Porta et al. (1999) who also report a positive relationship between latitude and government performance. But this is not consistent with the findings of Acemoglu et al. (2007b) who report that latitude has no effect on the fixed component of democracy. We find that effects of Catholicism, Protestantism, Islam, and Hinduism are negative and statistically significant.[12] Buddhism registers a positive effect and the effects of Confucianism and Judaism are statistically insignificant. Religion however remains jointly significant. This again is consistent with the findings of La Porta et al. (1999) who show that high proportion of Catholics and Muslims exhibit inferior government performance, but not consistent with the findings of Acemoglu et al. (2007b) who show that Catholicism, Protestantism, and Islam jointly has no effect on democracy. We repeat the same exercise with the fixed effects from contracting and regulatory institutions in columns 4 – 9. We observe a similar pattern emerging with the historical variables jointly significant in all occasions which lends strong support to the critical juncture theory. We

[11] Same caveat applies to the fixed effects related to contracting and regulatory institutions.

[12] Individual coefficients are not reported to save space but are available upon request.

also observe religion is jointly significant. Latitude is statistically significant in case of both contracting and regulatory institutions. Therefore, in summary we do find evidence in favor of the critical juncture theory. However there are other factors such as geography and religion which also explains a fair bit of the time invariant institutional variation.

B. Robustness

In Table 8 we test the robustness of our basic result on trade liberalization and property rights institutions. In columns 1 – 5 we check the robustness of γ_1 by introducing additional control variables. We notice that our result of a positive and statistically significant effect of liberalization on property rights institutions is robust to the inclusion of schooling, inequality measured by Gini coefficient, foreign aid, foreign aid from the US, and FDI. The choice of additional covariates is not arbitrary as previous studies document that these variables have impacts on institutions. Glaeser et al. (2004) show that schooling positively influences institutional quality; Engerman and Sokoloff (1997) show that inequality has a negative effect on institutions; and Alesina and Dollar (2000) document that foreign aid[13] and FDI has an impact on institutions. The magnitude of the estimate also appears to be quite stable ranging from 0.88 to 1.3. Our preferred estimate is 1.3 (see column 5, Table 3). Columns 6 – 9 estimate our model in different sub-samples to test for any possible sample selection bias. The basic result survives in all occasions.

Table 9 reports the robustness of our basic result on contracting institutions. Columns 1 – 5 show that our basic result is robust to the inclusion of schooling, inequality, foreign aid, foreign aid from the US, and FDI. The magnitude of the estimate also appears to be quite stable

[13] They find a positive correlation between foreign aid from the US and corruption. But they do not interpret it as a causal effect.

in this case ranging from 0.91 to 1.3. Our preferred estimate is 1.2 (see column 5, Table 4). Columns 6 – 9, reports the different samples test. The basic result survives across all sub-samples except in base sample without Africa.

In Table 10 we report the robustness tests of our basic result on regulatory institutions. Columns 1 – 5 show that our basic result survives the additional covariates test. The size of the estimate appears to be stable but only becomes smaller compared to our preferred estimate of 0.83. Columns 6 – 9, reports the different samples test. The basic result survives in all cases.

Table 11 reports the robustness of the basic result when an alternative measure of trade liberalization is used. In column (1) we look at the relationship between trade liberalization and property right institutions by replacing Sachs and Warner trade openness index with Wacziarg (2001) Trade Policy 1 ($TP1_{srt}$) index. This index is the predicted trade share when it is regressed on policy, factor endowment, and gravity determinant variables and statistically insignificant variables are ignored. This procedure appears to avoid both the problem of measurement error and the problem of collinearity between gravity, endowment, and policy (Wacziarg, 2001). The estimates predict a positive and statistically significant relationship between $TP1_{srt}$ and property rights institutions. Column (2) reports the estimate when we have contracting institutions as the dependent variable. The positive and statistically significant coefficient estimate survives.[14] Column (3) reports the estimate for contracting institutions. We notice that the coefficient is positive and statistically significant.

We also estimate our preferred model using trade share and the Alcala and Ciccone (2004) measure of real openness as direct measures of trade liberalization. These regressions are

[14] Note that the magnitude of the estimate is different as we are using a different measure of liberalization in this case.

not reported to save space. None of these measures are able to capture the liberalization effect as they are at best imperfect measures of liberalization (Wacziarg, 2001; Clemens and Williamson, 2004).

VI. Concluding Remarks

In this paper we look at the relationship between trade liberalization and economic institutions (in particular, property rights institutions, contracting institutions, and regulatory institutions) from a within country perspective. Our results can be summarized as follows. First, we notice that trade liberalization improves the quality of economic institutions (property rights institutions, contracting institutions, and regulatory institutions to be more specific). This relationship is robust with an alternative measure of trade liberalization, in different sub-samples, and to the inclusion of additional covariates. Second, the short-run impact of trade liberalization appears to be more important than the long-run effect. This may be indicative of a possibility that a short-term trade liberalization shock can shift institutions to higher steady state equilibrium. Third, the country fixed effects are highly correlated with log settler mortality, log population density in 1500, and the fraction of population speaking English (ENGFRAC) which is indicative of a historical root of cross-national divergence in institutions. However history is not the only factor as religion and latitude also seems to have a role.

We contribute to the literature by providing empirical evidence in favor of some of the previously untested theories of institutional change. Our results are consistent with North (1981) as it can be read as evidence in favor of trade liberalization affecting institutions through market size and technology transfer channel. It is also consistent with the Acemoglu and Robinson (2006) model which shows that trade induced transfer of skill-biased technology increases the

income share of the middle class and their political power. This leads to an improvement in the institutional quality (see Section II).

Our results show that trade liberalization matters for institutional development and contribute to a small but growing empirical literature on institutional change. The results are an important step towards understanding institutional change. The challenge however is to take this beyond the broad framework and work out a detailed understanding of the channels through which trade liberalization impacts institutions. Rodrik (2000b) is perhaps a step in the right direction where he identifies several channels through which trade liberalization leads to importation of institutions from abroad. But more research along this line is certainly called for.

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Data Appendix

Expropriation Risk ($PRINS_{srt}$): Expropriation risk is defined as the risk of "outright confiscation and forced nationalization" of property. This variable ranges from 0 to 10 where higher values are equals a lower probability of expropriation. It is averaged over years $t-4$ to t. Source: ICRG

Repudiation of Government Contracts ($CONINS_{srt}$): Risk of repudiation of contracts by the government. This variable also ranges from 0 to 10 and a higher value implies better contracting environment. It is averaged over years $t-4$ to t. Source: ICRG.

Regulatory Institutions ($REGUINS_{srt}$): This measure takes into account credit market regulations, labor market regulations, & business regulations. The measure ranges from 0 to 10 with a high score implying fewer regulations. Source: Gwartney and Lawson (2005).

Executive Constraint ($XCONS_{srt}$): A measure of the extent of institutionalized constraints on the decision making powers of chief executives. The measure ranges from 1 to 7 where higher values equal a greater extent of institutionalized constraints on the power of chief executives. Source: Polity IV dataset.

Trade Liberalization since $t-4$ (po_{srt}): Fraction of years open between $t-4$ and t. The original variable is from Sachs and Warner (1995) and is updated by Wacziarg and Welch (2003). Source: Sachs and Warner (1995).

Trade Liberalization since 1950 (PO_{srt}): Fraction of years open between 1950 and t. Source: Sachs and Warner (1995).

Trade Policy 1 ($TP1_{srt}$) *Index*: Trade Policy 1 ($TP1_{srt}$) = - 34.73*(Import Duty Share) – 0.22*(Nontariff Barriers) + 11.26*(Sachs/Warner Liberalization Status). Source: Wacziarg (2001).

Per Capita Income (y_{srt}): Real GDP per capita PPP (current international dollars), CGDP averaged over years $t-4$ to t. Source: Penn World Table, PWT 6.1.

Legal Origin: Legal origin dummies. Source: La Porta et al. (1999).

Regional Dummies: The region dummies cover Europe and Central Asia, East Asia and the Pacific, Latin America, Western Europe and North America, Middle East and North Africa, South Asia, and Sub Saharan Africa. Source: WDI, World Bank.

Log Settler Mortality (lsm): Natural log of estimated European settler mortality rate in colonies and settlements. Source: Acemoglu et al. (2001).

Log Population Density in 1500: Total population divided by total arable land in 1500 A.D. Source: Acemoglu et al. (2002).

ENGFRAC: It is one of the "first" language variables, corresponding to the fraction of the population speaking English. Source: Hall and Jones (1999).

EURFRAC: It is one of the "first" language variables, corresponding to the fraction of the population speaking one of the major languages of Western Europe: English, French, German, Portuguese, or Spanish. Source: Hall and Jones (1999).

Ethnic Fractionalization: Probability that two randomly selected individuals from a population belongs to different ethnic groups. Source: Alesina et al. (2003).

Linguistic Fractionalization: Probability that two randomly selected individuals from a population belongs to different linguistic groups. Source: Alesina et al. (2003).

Religious Fractionalization: Probability that two randomly selected individuals from a population belongs to different religious groups. Source: Alesina et al. (2003).

Religion: Percentage of population Catholic, Protestant, Muslim, Buddhist, Hindu, Confucian, and Jew. Source: Hall and Jones (1999).

Latitude: Source: Hall and Jones (1999).

Schooling: Average schooling years of the aged over 25 in the total population. This is measured at five year intervals from 1980-2000. Source: Barro and Lee (2000).

Inequality: Income Gini coefficient. Source: Deininger and Squire (1996).

Foreign Aid: Official Development Assistance (ODA). Source: WDI, World Bank.

Foreign Aid from the US: Official Development Assistance (ODA) received from the United States. Source: WDI, World Bank.

FDI: Foreign Direct Investment. Source: WDI, World Bank.

Table 1: Summary Statistics

Variable	Number of obs.	Mean	Standard Deviation	Minimum	Maximum
Expropriation Risk ($PRINS_{srt}$)	445	6.8	2.3	1	10
Repudiation of Government Contracts ($CONINS_{srt}$)	445	6.3	2.2	1	10
Regulatory Institutions ($REGUINS_{srt}$)	616	5.6	1.1	2.5	8.8
Trade Liberalization since $t-4$ (po_{srt})	1406	0.5	0.5	0	1
Trade Liberalization since 1950 (PO_{srt})	1384	0.3	0.4	0	1
Per Capita Income (y_{srt})	1684	4995.07	6935.29	59.22	52720.06

Notes: For a detailed discussion of the definition and source of these variables, see Data Appendix.

Table 2. Trade Liberalization and Institutions: Correlation Matrix

	Expropriation Risk ($PRINS_{srt}$)	Repudiation of Government Contracts ($CONINS_{srt}$)	Regulatory Institutions ($REGUINS_{srt}$)	Trade Liberalization since $t-4$ (po_{srt})	Trade Liberalization since 1950 (PO_{srt})	Per Capita Income (y_{srt})	Per Capita Income Squared (y_{srt}^2)
Expropriation Risk ($PRINS_{srt}$)	1.00						
Repudiation of Government Contracts ($CONINS_{srt}$)	0.91	1.00					
Regulatory Institutions ($REGUINS_{srt}$)	0.41	0.48	1.00				
Trade Liberalization since $t-4$ (po_{srt})	0.67	0.66	0.41	1.00			
Trade Liberalization since 1950 (PO_{srt})	0.54	0.62	0.39	0.70	1.00		
Per Capita Income (y_{srt})	0.69	0.77	0.49	0.56	0.69	1.00	
Per Capita Income Squared (y_{srt}^2)	0.59	0.66	0.47	0.47	0.62	0.95	1.00

Table 3: Trade Liberalization and Property Rights Institutions

	(1)	(2)	(3)	(4)	(5) Arellano-Bond	(6) Arellano-Bond
Dependent Variable:	**Expropriation Risk ($PRINS_{srt}$)**					
Trade Liberalization since $t-4$ (po_{srt})	1.47*** (0.2048)	1.19*** (0.1904)	0.83*** (0.1727)	2.4*** (0.2866)	1.3*** (0.4549)	
Per Capita Income (y_{srt})		0.0004*** (0.00004)	0.0002*** (0.00004)	0.001*** (0.0001)	0.0002 (0.0002)	0.0001 (0.0002)
Per Capita Income Squared (y_{srt}^2)		-1.2×10^{-8} *** (1.6×10^{-9})	-6.4×10^{-9} *** (1.4×10^{-9})	-1.6×10^{-8} *** (4.1×10^{-9})	-7.9×10^{-9} (4.7×10^{-9})	-1.4×10^{-9} (5.6×10^{-9})
$PRINS_{srt-5}$			0.61*** (0.0531)	0.63*** (0.1073)	1.15*** (0.2338)	1.3*** (0.2794)
$po_{srt}\times1985$						-0.13 (0.7314)
$po_{srt}\times1990$						1.98*** (0.5251)
$po_{srt}\times1995$						0.81* (0.5182)
F-test: *p*-value						[0.0005]
Hanson test: *p*-value					[0.23]	[0.10]
AR(1) test: *p*-value					[0.00]	[0.00]
Controls:						
Legal Origin	YES	YES	YES	NO	NO	NO
Country Dummies	NO	NO	NO	YES	YES	YES
Region Dummies	YES	YES	YES	NO	NO	NO
Year Dummies	YES	YES	YES	YES	YES	YES
Countries	108	106	106	106	105	105
Observations	388	374	272	272	166	166
Adjusted R^2	0.97	0.97	0.98	--	--	--

Notes: ***, **, and * indicates significance level at 1%, 5%, and 10% respectively against a two sided alternative. Figures in the parentheses are the respective standard errors. Column (6) F-test is for time effect. Note that only AR(1) test is reported which shows that the instruments are correlated with the suspected endogenous variables. AR(2) test is not required since we have a maximum of 3 observations per country.

Table 4: Trade Liberalization and Contracting Institutions

	(1)	(2)	(3)	(4)	(5) Arellano-Bond	(6) Arellano-Bond
Dependent Variable:	**Repudiation of Government Contracts ($CONINS_{srt}$)**					
Trade Liberalization since $t-4$ (po_{srt})	1.20*** (0.2069)	0.89*** (0.1817)	0.78*** (0.1668)	1.9*** (0.2575)	1.2*** (0.4360)	
Per Capita Income (y_{srt})		0.0004*** (0.00004)	0.0002*** (0.00004)	0.0006*** (0.0001)	0.0001 (0.0002)	0.0003 (0.0002)
Per Capita Income Squared (y_{srt}^2)		-1.1×10^{-8} *** (1.5×10^{-9})	-6×10^{-9} *** (1.4×10^{-9})	-1.5×10^{-8} *** (3.7×10^{-9})	-3.1×10^{-9} (4.9×10^{-9})	-4.3×10^{-9} (5.8×10^{-9})
$CONINS_{srt-5}$			0.68*** (0.0548)	0.41*** (0.1093)	1.2*** (0.2646)	1.2*** (0.2883)
$po_{srt}\times1985$						-0.75 (0.6624)
$po_{srt}\times1990$						1.7*** (0.4802)
$po_{srt}\times1995$						0.99** (0.4670)
F-test: *p*-value						[0.002]
Hanson test: *p*-value					[0.65]	[0.10]
AR(1) test: *p*-value					[0.00]	[0.00]
Controls:						
Legal Origin	YES	YES	YES	NO	NO	NO
Country Dummies	NO	NO	NO	YES	YES	YES
Region Dummies	YES	YES	YES	NO	NO	NO
Year Dummies	YES	YES	YES	YES	YES	YES
Countries	108	106	106	106	105	105
Observations	388	374	272	272	166	166
Adjusted R^2	0.96	0.97	0.98	--	--	--

Notes: ***, **, and * indicates significance level at 1%, 5%, and 10% respectively against a two sided alternative. Figures in the parentheses are the respective standard errors. Column (6) F-test is for time effect. Note that only AR(1) test is reported which shows that the instruments are correlated with the suspected endogenous variables. AR(2) test is not required since we have a maximum of 3 observations per country.

Table 5: Trade Liberalization and Regulatory Institutions

	(1)	(2)	(3)	(4)	(5) Arellano-Bond	(6) Arellano-Bond
Dependent Variable:	**Regulatory Institutions ($REGUINS_{srt}$)**					
Trade Liberalization since $t-4$ (po_{srt})	0.49*** (0.0963)	0.49*** (0.0919)	0.29*** (0.0806)	0.59*** (0.1053)	0.83*** (0.2011)	
Per Capita Income (y_{srt})		0.0001*** (0.00001)	0.00002** (0.00001)	0.0001*** (0.00002)	-0.00001 (0.00004)	-0.0001** (0.00005)
Per Capita Income Squared (y_{srt}^2)		-1.3×10^{-9} ** (3.7×10^{-10})	-5.7×10^{-10} ** (2.9×10^{-10})	-1×10^{-9} ** (5×10^{-10})	-5.9×10^{-10} (7.5×10^{-10})	1.1×10^{-9} (8.4×10^{-10})
$REGUINS_{srt-5}$			0.62*** (0.0363)	0.26*** (0.0559)	0.88*** (0.1282)	1.03*** (0.1311)
$po_{srt}\times1985$						0.12 (0.2959)
$po_{srt}\times1990$						0.43* (0.2466)
$po_{srt}\times1995$						0.98*** (0.2629)
$po_{srt}\times2000$						0.31 (0.2969)
F-test: *p*-value						[0.002]
Hanson test: *p*-value					[0.10]	[0.10]
AR(1) test: *p*-value					[0.00]	[0.00]
AR(2) test: *p*-value					[0.21]	[0.30]
Controls:						
Legal Origin	YES	YES	YES	NO	NO	NO
Country Dummies	NO	NO	NO	YES	YES	YES
Region Dummies	YES	YES	YES	NO	NO	NO
Year Dummies	YES	YES	YES	YES	YES	YES
Countries	104	104	103	103	101	101
Observations	600	595	490	490	386	386
Adjusted R^2	0.9796	0.98	0.98	--	--	--

Notes: ***, **, and * indicates significance level at 1%, 5%, and 10% respectively against a two sided alternative. Figures in the parentheses are the respective standard errors. Column (6) F-test is for time effect.

Table 6: Long-Run Trade Liberalization and Institutions

	(1) Arellano-Bond	(2) Arellano-Bond	(3) Arellano-Bond	(4) Arellano-Bond	(5) Arellano-Bond	(6) Arellano-Bond
Dependent Variable:	**Expropriation Risk ($PRINS_{srt}$)**		**Repudiation of Government Contracts ($CONINS_{srt}$)**		**Regulatory Institutions ($REGUINS_{srt}$)**	
Trade Liberalization since 1950 (PO_{srt})		-1.04 (2.947)		-0.76 (2.772)		-1.8* (0.9310)
Trade Liberalization since $t-4$ (po_{srt})	1.3*** (0.4549)	1.4*** (0.5143)	1.2*** (0.4360)	1.3*** (0.4929)	0.83*** (0.2011)	0.97*** (0.2212)
$PRINS_{srt-5}$	1.15*** (0.2338)	1.18*** (0.2506)				
$CONINS_{srt-5}$			1.2*** (0.2646)	1.2*** (0.2829)		
$REGUINS_{srt-5}$					0.88*** (0.1282)	0.94*** (0.1347)
Hanson test: *p*-value	[0.23]	[0.25]	[0.65]	[0.68]	[0.10]	[0.10]
AR(1) test: *p*-value	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
AR(2) test: *p*-value					[0.21]	[0.20]
Controls:						
y_{srt}	YES	YES	YES	YES	YES	YES
y_{srt}^2	YES	YES	YES	YES	YES	YES
Country Dummies	YES	YES	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES	YES	YES
Countries	105	105	105	105	101	101
Observations	166	166	166	166	386	386

Notes: ***, **, and * indicates significance level at 1%, 5%, and 10% respectively against a two sided alternative. Figures in the parentheses are the respective standard errors. Trade Liberalization since 1950 (PO_{srt}) variable is constructed by dividing the number of years of trade policy openness between 1950 and t by $t-1950$.

Table 7: Effect of History on Institutions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent Variable:	**Fixed effect from column (4) of Table 3**			**Fixed effect from column (4) of Table 4**			**Fixed effect from column (4) of Table 5**		
Log settler mortality	-0.58***	-0.47***	0.07	-0.31***	-0.24***	-0.04	-0.08***	-0.09***	-0.05
	(0.0901)	(0.0927)	(0.1004)	(0.0692)	(0.0715)	(0.0640)	(0.0218)	(0.0232)	(0.0386)
Log population density in 1500	-0.69***	-0.58***	-0.21**	-0.52***	-0.45***	-0.35***	0.001	-0.002	-0.09***
	(0.0702)	(0.0754)	(0.0962)	(0.0539)	(0.0582)	(0.0613)	(0.0159)	(0.0171)	(0.0335)
ENGFRAC	0.85**	1.27***	3.14***	0.47	0.64*	2.7***	0.37***	0.22**	0.85***
	(0.4169)	(0.4749)	(0.6799)	(0.3199)	(0.3663)	(0.4334)	(0.0926)	(0.1077)	(0.2440)
EURFRAC	0.06	0.09	1.03	0.27	0.44	-0.54	-0.08	0.20**	0.43
	(0.2827)	(0.3842)	(0.7729)	(0.2169)	(0.2963)	(0.4926)	(0.0684)	(0.0981)	(0.2849)
Colony in 1900-1950		-0.35	-0.18		-0.08	0.05		-0.28***	-0.69***
		(0.3273)	(0.4105)		(0.2525)	(0.2616)		(0.0868)	(0.1488)
History F-test			[0.00]			[0.00]			[0.00]
Ethno-Linguistic and Religious Fragmentation			-1.2*			-0.69			0.27
			(0.7157)			(0.4562)			(0.2628)
Latitude			4.04***			2.78***			0.61**
			(0.8934)			(0.5694)			(0.3019)
Religion F-test			[0.00]			[0.00]			[0.00]
Observations	62	61	61	62	61	61	62	61	61
F-stat	75.47	55.06	67.7	64.55	47.17	89.48	12.31	11.56	10.75
Adjusted R^2	0.64	0.62	0.92	0.60	0.58	0.93	0.13	0.15	0.50

Notes: ***, **, and * indicates significance level at 1%, 5%, and 10% respectively against a two sided alternative. Figures in the parentheses are the respective standard errors. History F-test reports the p-value for the joint significance of log settler mortality, log population density in 1500, ENGFRAC, EURFRAC, and Colony in 1900-1950. Religion F-test reports the p-value for the joint significance of fraction of Catholic, fraction Protestant, fraction Muslim, fraction Buddhist, fraction Hindu, fraction Confucian, and fraction Jew.

Table 8: Trade Liberalization and Property Rights Institutions: Robustness Check

	(1)	(2)	(3)	(4)	(5)	(6) Base Sample without Africa	(7) Base Sample without Asia	(8) Base Sample without Americas	(9) Base Sample without Neo-Europe
	Arellano-Bond Estimates								
Dependent Variable:	**Expropriation Risk ($PRINS_{srt}$)**								
Trade Liberalization since $t-4$ (po_{srt})	1.14** (0.4612)	1.3** (0.6430)	0.94** (0.4124)	0.88** (0.4264)	1.15** (0.4626)	1.03* (0.5609)	1.5*** (0.4699)	1.4** (0.6237)	1.3*** (0.4584)
Hanson test: *p*-value	[0.29]	[0.02]	[0.39]	[0.29]	[0.64]	[0.09]	[0.48]	[0.26]	[0.29]
AR(1) test: *p*-value	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Controls:	y_{srt} , y_{srt}^2 , $PRINS_{srt-5}$, Country Dummies, Year Dummies								
Additional Controls:	Schooling** * (+)	Inequality	Foreign Aid* (-)	Foreign Aid from the US	FDI	--	--	--	--
Countries	88	74	80	80	100	72	86	81	101
Observations	144	99	138	138	158	113	131	120	162

Notes: ***, **, and * indicates significance level at 1%, 5%, and 10% respectively against a two sided alternative. Figures in the parentheses are the respective standard errors. Schooling is used as a proxy of human capital from the Barro-Lee dataset. Inequality is measured by Gini coefficient from Deininger-Squire/ World Bank dataset. Foreign Aid and Foreign Aid from the US are ODA data from WDI. Neo-Europe includes Australia, Canada, New Zealand, and the United States. All models estimated using the Arellano and Bond estimator. Statistical significance and sign of the coefficient on additional controls are also indicated. Note that only AR(1) test is reported which shows that the instruments are correlated with the suspected endogenous variables. AR(2) test is not required since we have a maximum of 3 observations per country.

Table 9: Trade Liberalization and Contracting Institutions: Robustness Check

	(1)	(2)	(3)	(4)	(5)	(6) Base Sample without Africa	(7) Base Sample without Asia	(8) Base Sample without Americas	(9) Base Sample without Neo-Europe
	Arellano-Bond Estimates								
Dependent Variable:	**Repudiation of Government Contracts (** $CONINS_{srt}$ **)**								
Trade Liberalization since $t-4$ (po_{srt})	1.13** (0.4567)	1.15** (0.5121)	0.95** (0.4083)	0.91** (0.4137)	1.3*** (0.4642)	0.78 (0.5295)	1.2*** (0.4477)	1.9*** (0.6345)	1.2*** (0.4356)
Hanson test: *p*-value	[0.69]	[0.07]	[0.23]	[0.23]	[0.91]	[0.23]	[0.89]	[0.38]	[0.76]
AR(1) test: *p*-value	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.01]	[0.00]	[0.00]
Controls:	y_{srt} , y_{srt}^2 , $CONINS_{srt-5}$, Country Dummies, Year Dummies								
Additional Controls:	Schooling	Inequality ** (+)	Foreign Aid	Foreign Aid from the US	FDI	--	--	--	--
Countries	88	74	80	80	100	72	86	81	101
Observations	144	99	138	138	158	113	131	120	162

Notes: ***, **, and * indicates significance level at 1%, 5%, and 10% respectively against a two sided alternative. Figures in the parentheses are the respective standard errors. Schooling is used as a proxy of human capital from the Barro-Lee dataset. Inequality is measured by Gini coefficient from Deininger-Squire/ World Bank dataset. Foreign Aid and Foreign Aid from the US are ODA data from WDI. Neo-Europe includes Australia, Canada, New Zealand, and the United States. All models estimated using the Arellano and Bond estimator. Statistical significance and sign of the coefficient on additional controls are also indicated. Note that only AR(1) test is reported which shows that the instruments are correlated with the suspected endogenous variables. AR(2) test is not required since we have a maximum of 3 observations per country.

Table 10: Trade Liberalization and Regulatory Institutions: Robustness Check

	(1)	(2)	(3)	(4)	(5)	(6) Base Sample without Africa	(7) Base Sample without Asia	(8) Base Sample without Americas	(9) Base Sample without Neo-Europe
	Arellano-Bond Estimates								
Dependent Variable:	**Regulatory Institutions ($REGUINS_{srt}$)**								
Trade Liberalization since $t-4$ (po_{srt})	0.65*** (0.2075)	0.69*** (0.2407)	0.76*** (0.2216)	0.73*** (0.2258)	0.79*** (0.2013)	1.5*** (0.2673)	0.79*** (0.2148)	0.37* (0.2115)	0.82*** (0.2033)
Hanson test: *p*-value	[0.10]	[0.10]	[0.12]	[0.12]	[0.10]	[0.10]	[0.13]	[0.08]	[0.10]
AR(1) test: *p*-value	[0.00]	[0.06]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
AR(2) test: *p*-value	[0.72]	[0.24]	[0.04]	[0.03]	[0.31]	[0.13]	[0.21]	[0.03]	[0.22]
Controls:	y_{srt} , y_{srt}^2 , $REGUINS_{srt-5}$, Country Dummies, Year Dummies								
Additional Controls:	Schooling	Inequality	Foreign Aid	Foreign Aid from the US	FDI	--	--	--	--
Countries	89	75	78	78	101	69	83	77	97
Observations	256	149	289	289	379	264	314	299	370

Notes: ***, **, and * indicates significance level at 1%, 5%, and 10% respectively against a two sided alternative. Figures in the parentheses are the respective standard errors. Schooling is used as a proxy of human capital from the Barro-Lee dataset. Inequality is measured by Gini coefficient from Deininger-Squire/ World Bank dataset. Foreign Aid and Foreign Aid from the US are ODA data from WDI. Neo-Europe includes Australia, Canada, New Zealand, and the United States. All models estimated using the Arellano and Bond estimator. Statistical significance and sign of the coefficient on additional controls are also indicated. Note that only AR(1) test is reported which shows that the instruments are correlated with the suspected endogenous variables. AR(2) test is the test of second order autocorrelation in the instruments and exogenous variables.

Table 11: Trade Liberalization and Institutions: Robustness Check with an Alternative Measure of Liberalization

	(1) **Arellano-Bond**	**(2)** **Arellano-Bond**	**(5)** **Arellano-Bond**
Dependent Variable:	**Expropriation Risk ($PRINS_{srt}$)**	**Repudiation of Government Contracts ($CONINS_{srt}$)**	**Regulatory Institutions ($REGUINS_{srt}$)**
Trade Policy 1 ($TP1_{srt}$)	0.10*** (0.0397)	0.099** (0.0391)	0.06*** (0.0186)
Hanson test: *p*-value	[0.07]	[0.19]	[0.11]
AR(1) test: *p*-value	[0.00]	[0.00]	[0.03]
Controls:	y_{srt} , y_{srt}^2 , $PRINS_{srt-5}$, Country Dummies, Year Dummies	y_{srt} , y_{srt}^2 , $CONINS_{srt-5}$, Country Dummies, Year Dummies	y_{srt} , y_{srt}^2 , $REGUINS_{srt-5}$, Country Dummies, Year Dummies
Countries	75	75	73
Observations	110	110	134

Notes: ***, **, and * indicates significance level at 1%, 5%, and 10% respectively against a two sided alternative. Figures in the parentheses are the respective standard errors.

$TP1_{srt}$ is from Wacziarg (2001). For each period they are computed as (see Wacziarg 2001, p. 407):

Trade Policy 1 ($TP1_{srt}$) = - 34.73*(Import Duty Share) – 0.22*(Nontariff Barriers) + 11.26*(Sachs/Warner Liberalization Status)

AR(2) test is not required since we have a maximum of 3 observations per country in these cases.

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