Formation of Preferential Trade Agreements and Political Survival of the Democratic Leaders

Abstract

Although existing literature shows economic explanations for the proliferation of PTAs and political conditions fostering PTA formation, the individual leaders’ incentive to sign those agreements in terms of political survival remains unexplained. This paper attempts to analyze the effect of PTA formation on chief executives’ tenure in office in order to explain the recent trend toward PTA, proposing a hypothesis that formation of a PTA prolongs a chief executive’s tenure in democracies. Through my statistical model, I found that PTA formation still has a significant positive influence on democratic chief executives’ tenure after controlling for other factors that affect tenure.

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International Relations Honors Thesis
Introduction

The number of preferential trade agreements (PTAs), or regional trade agreements (RTAs), all over the globe has been drastically increasing since the establishment of European Economic Community was concluded by the Treaty of Rome in 1957, and the increasing number of PTAs corresponds to the amplifying trend toward regionalism. Indeed, more than 250 PTAs have been notified to GATT and WTO by 2002, which include some 150 PTAs notified after the establishment of WTO in 1995 (WTO 2006). Even Japan and Hong Kong, who were exceptions among GATT members to be part of any PTA at the birth of WTO, have agreed to sign a couple of PTAs during the 2000s, aiming to pave the way to free trade areas (FTAs) in a near future (Fernandez and Portes 1998; WTO 2006). While past studies by both political scientists and economists have provided theories pertaining to the proliferation of PTAs on the national and international levels, they have fundamentally ignored the individual decision makers’ motive for signing such agreements.

In this paper I present a political explanation for the proliferation of PTAs, specifically focusing on political survival of the democratic chief executives as the driving force of such agreements, with a game-theoretical framework and empirical evidence. Although trade agreements are signed on an international level, the policy makers’ interest lies in how effectively they signal their domestic constituency that they provide welfare in forms of private and public
goods. I argue that state leaders seek to prolong their terms in office by entering PTAs, which credibly signals their commitment to the constituency’s welfare by promoting commercial liberalization. A “PTA,” which repeatedly appears in this paper, refers to any bilateral or multilateral trade union in which lower tariffs are imposed on goods produced in the member countries than those produced outside.

**Related Literature**

Economic explanations for the states’ incentives to sign trade agreements have been our major sources of understanding the logic behind proliferation of PTAs, since the tangible aim of a PTA is specifically economic: to reduce the existing trade barriers, mostly tariffs, among member states. It is convincing that a government chooses to enter a PTA because it receives greater welfare from bilateral or multilateral trade agreements than it does from a unilateral set of trade policies (Bagwell and Staiger 1999). Some even argue that a PTA distributes greater welfare not only to the member states but also to a broader area of the world, since increasing PTAs represent the process of development of multilateral free trade; PTAs may be the catalyst for creating “a broader pattern of free trade” as the chains of PTAs multiply, whereas efforts to liberalize trade at the global level has been a failure (Krueger 1999; Krugman 1991). A disagreement to this argument is that domination of PTAs will result in multilateral trade reduction rather than broader free trade; therefore, PTAs are not intended to broaden multilateral trading (Summers 1991; Bhagwati 1995; Bhagwati 1996). Moreover, some argue that geographic proximity generates PTAs; geographically close states enter into trade agreements because they are the “natural” trading partners that already have a history of close trade relationship, and they are also more trade creating
while trades between distant states would be trade diverting (Summers 1991; Krugman 1991). Yet, opponents of this view insist that geographic proximity does not create a more significant trade relationship and therefore does not explain why neighboring states form PTAs (Krishna 2003).

Political scientists commonly agree that states’ tendency to militarily cooperate (not to go to war) increases as the level of democracy increases, which is often referred to as the “law of democratic peace” (see, e.g., Bueno de Mesquita et al. 1999 and Maoz and Russet 1993). The same logic applies in terms of commercial cooperation as well, because the political gain of a democratic leader from a PTA, which signals the electorate that “he is not being too extractive” when facing an economic decline, is significant due to free and fair elections (Mansfield et al. 2002). Studies on the intersection between domestic and international politics suggest that an international negotiation is a product of a two-level game between the domestic and international level, and hence political science explanations take into account the domestic politics as the key factor of trade agreements (Iida 1993). Since it is the interest of the large “winning coalition,” the group that retains a leader in power, in a democracy to maintain good economy, a policy maker must attempt to sustain the economic gain of the winning coalition at least at a level that the coalition does not defect and support a political rival (Bueno de Mesquita et al. 2003).

Studies on the domestic political factors leading states to enter PTAs have identified several factors that increase the probability of PTA signing. When a leader faces domestic pressures of rising economic openness due to any deteriorating macroeconomic condition, he or she will resort to international cooperation, since “a country’s level of economic growth, employment and/or inflation may depend critically on the behavior of other states” (Milner 1998). This strategy is also effective in resisting domestic demand for protectionism from certain interest groups, which may be detrimental to the national economy as a whole, since the “ties” set by trade agreements become a pretext for not providing protection (and hence the leader will preempt the
potential intense domestic political opposition) (Milner 1998). Mansfield et al. confirm that the number of veto players in political systems also influence the probability of PTA signing. They find that as the number of veto players increase then a PTA becomes less likely to be formed (Mansfield et al. 2005).

McGillivray and Smith (2006) establish that with leader specific punishment in international agreements leaders are able to improve their credibility for compliance and punishment against noncompliance in a domestic political environment where replacement of a leader is relatively easy. A leader who fails to comply faces leader specific punishment exercised by another party, and the domestic constituency, who wants to avoid the loss of national integrity and welfare, would domestically punish the leader. They show that it is an individual leader, rather than a nation as a unitary actor, who determines the conditions under which international trading is arranged.

Then, given the political and economic conditions, what is the individual leader’s motive for signing a PTA? If a chief executive in a democracy, who is usually given the power to conclude treaties with foreign states (typically, with more than a majority support of congress or parliament), does not have an individual incentive to bother signing an international trade agreement, then no PTA would be unlikely formed. Mansfield et al. (2003) suggest that the information provided by trade agreements effectively report leaders’ performance and hence creates political incentives for the leaders to enter such agreements. I step further arguing that leaders’ benefit is specifically tenure in office, since state leaders capitalize on their political utility by holding office. Their political actions are primarily meant to maximize their terms of office (Bueno de Mesquita 2002; Bueno de Mesquita et al. 2003). Although existing literature shows states’ economic interests, the mechanism why democracies are more prone to enter PTAs, and the conditions under which PTAs are likely to be formed, the direct incentive for the political leaders of
democracies to do so concerning political survival remains theoretically and empirically unexplained. Thus if these domestic political motives drive signing of PTAs and it has beneficial consequences both politically and economically, we must investigate in formation of a PTA in terms of leaders’ political survival, or tenure in office.

A Model of a Three-Player Game between Chief Executive, Protectionists, and the Electorate

Framework

To illustrate the mechanism in which a chief executive in a democracy prolongs his/her tenure by signing a PTA, I present a simple extensive form game with three players: the chief executive, protectionists, and the electorate. The degree of domestic political support for a state leader on an international negotiation is determined by the pressure applied by domestic interest groups, who are, as far as trade agreements are concerned, protectionists who have particular interests in sustaining a high level of trade barriers. Under a democratic environment, the electorate, the audience of the political battle between a policy maker and opposing interest groups, determines whether to reward or punish the policy maker by reelection or eviction in an election. In my model I define the electorate to be the winning coalition, who holds the power to determine policy makers’ political fortune.

Given the state’s political and economic relationships with other states, the chief executive, the chief diplomat, decides whether or not to sign a PTA and thus initiates the game. Prior to the domestic game, I assume that policy makers enter a negotiation for a PTA only when they have symmetric information on a win-set, indicating that the legislatures of both (all) countries have an
incentive to pass the bill. The legislature, therefore, can be omitted from the domestic game since it is assumed to pass the bill after the chief executives meet an agreement.

Despite the general agreement among economists that bilateral or multilateral trade agreements provide a nation with greater welfare than unilateral set of trade policies do, the demand for protectionism by interest groups has remained prominent as the trend of multilateral tariff reduction has amplified (Bagwell and Staiger 1999; Bhagwati 1995). Hence the chief executive’s attempt to reduce tariff levels through coordination with other countries is followed by protectionists’ opposition aimed to sustain a high tariff level or even to increase it. The protectionists do not have incentives to put pressure on CE who imposes high tariffs, and hence the status quo is either reelection or eviction of CE without formation of a PTA. The electorate has an incentive to support the policy maker if s/he successfully reduces the trade barriers and provide greater welfare.

In this model I show that the probability that the chief executive is reelected increases as his/her cost from betrayal, meaning withdrawal from an international agreement, increases. Fearon theorizes that in an international dispute, a leader faces “audience costs” by backing down from the dispute and fails to establish credibility, and the more the dispute escalates, the more severe the cost becomes (Fearon 1994). In my model, the audience cost from deviating from a trade agreement is assumed to be significant since the audience, the electorate, benefits from (sustaining) such an agreement. Another key notion in my theory is that leader specific punishment considerably affects a leader’s political fortune in that the domestic audience wants to maintain national integrity and welfare provided by compliance (McGillivray and Smith 2006). I limit my model to democracies since these studies suggest that only such political systems can effectively generate audience costs and make leader specific punishment work. Hence the key notion in my model is that a nation-state is not treated as a unitary actor; if I assume a PTA-forming
body is a unitary nation, and if a chief executive, a PTA-signing agent, is not accountable for the domestic constituency, then neither audience costs nor leader specific punishment would hold significance. Moreover, it is commonly understood that preferential trading arrangements consisting of developing countries, which are less likely to have democratic polity, have little effects due to lack of economic complementary (Mansfield and Pevehouse 2000). This adds more validity to limiting my model to democracies.

**Sequence and Payoffs**

In this sequential game: 1) the chief executive (CE) decides whether or not to enter a PTA; 2) the protectionists respond by either fighting or acquiescing if a PTA is formed; 3) CE responds to the protectionists’ pressure by either fighting or giving in (withdrawing from the PTA); and 4) at every terminal node the electorate decides whether or not to keep CE in office in an election.

The protectionists gain a payoff of \( P (> 0) \) by the state’s withdrawal from the PTA or if CE does not choose to enter a PTA in the first place, due to the high tariff level. If CE does not back down following their decision to fight, then they incur a fighting (losing) cost of \( k (> 0) \). Their payoff is 0 when they do not fight after CE signs a PTA. The electorate gains a constant payoff of \( E (> 0) \) by simply voting due to the fact that they form the winning coalition, and when there is a PTA at the point of election, a payoff of \( t (> 0) \) from the greater economic welfare is added. In a case in which they reelect CE after CE and protectionists fight, they gain a surplus “credibility” payoff of \( c (> 0) \) from retaining a leader who they know to be credible. Retention of a credible leader benefits the domestic audience also because a change in leader results in a temporary decline of national credibility, such as the value of national bonds (Stasavage 2003, Chapter 1). CE receives a constant payoff of \( X (>0) \) by being reelected, and when s/he is reelected, an additional
payoff is given as a function of other two players’ payoffs, which is an uncertainty. The distribution of the chief executive’s “care” for the electorate is represented by \( \alpha \) \((0, 1)\), and for the protectionists, \((1-\alpha)\). Thus the chief executive’s payoff from reelection is largely determined by \( \alpha \), and corresponds to the payoff that the protectionists and electorate obtain from the outcome of the game. The implication of this assumption is convincing since policy makers seek for longer tenure by assessing to which actors they should distribute more private goods (given that public goods benefit everybody).

These payoffs suggest that CE’s interest is in reelection regardless of the course of the game, and that the protectionists prefer acquiescing to fighting if CE is to fight but prefer fighting otherwise. The electorate always prefers an outcome with a PTA, and it is indifferent between reelecting and evicting CE if there is no PTA. The game is summarized in an extensive form in Figure 1 in the Appendix.

**Equilibrium**

Solving the game by backward induction, I evaluate subgame perfect Nash equilibria and the conditions under which they are achieved, that is, the levels of \( \alpha \).

Case 1 – Protectionists’ Perception is \( \alpha < (-a + P + k) / (P + k + t + c) \ldots \) [1]

1.1 – *Protectionists’ perception is correct.*

Because of [1], protectionists choose to fight at node I and CE acquiesces at node II. Electorate either reelects or evicts CE.

1.2 – *Protectionists’ perception is wrong, that is, \( \alpha > (-a + P + k) / (P + k + t + c) \).*

Protectionists choose to fight at node I but CE fights back due to large \( \alpha \), meaning that CE is willing to provide a large amount of private goods to the electorate.
Consequently, CE wins reelection.

Case 2 – Protectionists’ Perception is $\alpha > (-a + P + k) / (P + k + t + c) \ldots [2]

2.1 – CE’s distribution of private goods to electorate exceeds the payoff protectionists gain relative to the sum of protectionists’ and electorate’s possible payoffs; that is, $\alpha > P / (P + t)$.

CE signs a PTA, protectionists acquiesce, and electorate votes to either retain or evict CE.

2.2 – Case opposite to 2.1; that is, $\alpha < P / (P + t)$.

CE does not sign a PTA, and electorate’s decision follows.

**Why PTA Prolongs Tenure in Democracies**

The equilibrium of my interest is achieved in case 1.2, where CE signs a PTA, the protectionists fight, CE fights back, and the electorate reelects CE. With this set of strategies CE wins reelection without the risk of eviction. Again, the initial condition under which this particular equilibrium is achieved is that CE chooses to fight at node II, given that $\alpha > (-a + P + k) / (P + k + t + c)$. In addition, the uncertainty of CE’s type must lead the protectionists to fight at node I. Below I show by comparative statics that with a large audience cost, $a$, the level of $\alpha$ with which CE gains better payoff by fighting at node II becomes relatively small; that is, the probability that protectionists fight at node II increases with large $a$ since case 1, that the protectionists’ perception is $\alpha < (-a + P + k) / (P + k + t + c)$, becomes more likely to be satisfied.

I let $P + k = A$ ($P$ and $k$ have almost identical features since they are protectionists’ gain and loss from CE’s decision over PTA) and $(A - a) / (A + t + c) = Y$ for the sake of simplification. Then I
reshape equation [2]:

\[ \alpha > (A - a) / (A + t + c) = Y. \quad [3] \]

Taking the first derivative of \( Y \) in terms of \( a \), we obtain:

\[ dY / da < 0, \quad [4] \]

indicating that \( Y \) decreases as \( a \) increases (and vice versa). The core implication of this result is that as the audience cost increases the threshold value of \( \alpha \) for CE to fight decreases, and thus it is proven that in a democratic environment \( \text{Pr(PTA, Fight, Fight, Reelect)} \) is relatively high. In other words, leaders who face large audience costs can credibly announce that their commitment to such as agreement, which is beneficial to the nation, is truthful at the international level. As a result, leaders who undertake large audience costs are very likely to win reelection. The chief executive should almost always set a level of \( \alpha \) that is larger than the threshold level \( ((-a + P + k) / (P + k + t + c)) \) since a democratic leader must weigh the electorate more heavily than the protectionists under a rationalist assumption that the chief executive is only concerned about political survival, given that the majority of the electorate does not favor protectionism.

Research Design

Empirical Method

To test my hypothesis that democratically elected chief executives seek for longer tenure by signing PTAs, I conduct statistical analyses adopting two duration models (survival analysis): the Cox Proportional-Hazards Model and the Weibull Model. According to my hypothesis, the dependent variable is chief executives’ tenure, or term of office, and the explanatory variable of my
interest is PTA, whether a chief executive has signed a PTA. I expect that the latter causes the former.

My first motive to use the above two models is that survival analysis is specifically designed to examine the time for an event to occur. Hence these models do not have an intercept; at \( t=0 \) (the initial point) the hazard rate is zero (Cleves et al. 2002, 113-136). It is reasonable to assume that at the exact point of time when a state leader is elected, the probability that s/he is evicted from office is zero. The hazard (eviction) rate gradually increases from zero after the election. Secondly, I assume the distribution of survival times to take an exponential form, since the instantaneous risk of eviction is expected to increase over time. Thirdly, because I include chief executives who have not yet been evicted in my model, there inevitably is a censoring problem, meaning that not all observations have experienced a failure (eviction). The two models are not affected by this particular problem. Finally, the difference between the two models in the assumed distribution (parameter) ensures robustness. The Cox Proportional-Hazards Model is semi-parametric, which does not specify a particular survivor hazard function of distribution, whereas the Weibull Regression Model assumes the Weibull distribution (Cleves et al. 2002, 206-214).

Although my theoretical dependent and key independent variables are tenure and formation of PTA, in the statistical models, the dependent variable is failure, or \( OUTCOME \), which indicates whether or not a chief executive failed to remain in office. Survival analysis estimates the hazard rate \((0, 1)\) at time \( t \); hazard rate of 0 indicates that there is no risk of eviction, and hazard rate of 1 denotes eviction. \( TENURE \) and \( OUTCOME \) make up the baseline hazard (a common component of the equation that is not affected by the variance between observations), and the independent variables determine the exponential component \( \exp(x\beta) \) of individual observations. The baseline hazard represents the hazard rate for a respective chief executive, given that all
independent variables are zero. The fact that all leaders fail does not matter in this model since this model estimates the probability that a chief executive fails at time $t$, under certain conditions. My theory predicts that as a PTA is formed (therefore the variable $PTA$ increases), then tenure also increases. According to the survival analysis models, it can be rephrased as: as $PTA$ increases, the probability of failure decreases. In other words, under a constant condition, a chief executive’s tenure elongates as s/he signs a PTA.

$OUTCOME$ is a dichotomous variable representing failure, or the end of a chief executive’s term of office. If $OUTCOME$ is 0, the chief executive’s tenure has not ended, while if 1, s/he has been evicted either by the voter or term limit. Due to its nature, $OUTCOME$ 0 is observed only for the most recent chief executive of a country, whose failure will be observed in the future. $TENURE$ measures after how many years a chief executive left office. The data are derived from the Database of Political Institutions (DPI) of the World Bank (Beck et al. 2001) and are coded by the author so that they represent how many years chief executives have remained in office throughout their entire terms. Yet if a same chief executive becomes reelected after losing office to another individual, then s/he is treated as a different chief executive (has a different id.) Since it is not able to see from the data the exact length of each chief executive’s tenure including months and dates, this rather minor error is ignored here. The regression models estimate the time for a leader $i$ to lose office, by whatever reason such as an election and term limit. In the Cox Proportional-Hazards Model, changes relative to the baseline hazard rate at time $t$, $h_0(t)$, are assumed to be proportional.

The Cox Proportional-Hazards Model
First, I estimate the following model, based on the Cox Proportional-Hazards Model:

Eviction Rate \( h(t) \) = \( h_0(t) \exp(\beta_1 \text{PTA}_i + \beta_2 \text{W}_i + \beta_3 \text{MAJ}_i + \beta_4 \text{FINITTRM}_i + \beta_5 \text{SYSTEM}_i + \beta_6 \text{CGDP}_i + \beta_7 \text{GROWTH}_i + \beta_8 \text{OPENC} + \beta_9 \text{TRANSPARENCY}_i + \varepsilon) \). [5]

The exponential model shows how the likelihood of a chief executive’s eviction is determined by the covariates at time \( t \). If the coefficient for an independent variable is above 1, the variable increases the likelihood that a leader loses office, whereas a coefficient below 1 indicates that the variable decreases the likelihood of eviction, suggesting that it leads to longer tenure.

The proposed eviction (hazard) rate is derived from the baseline hazard \( h_0(t) \) and the exponential composed of independent variables. The key independent variable here is \( \text{PTA} \), a dichotomous dummy variable indicating if a chief executive has signed any PTA while in office. I depend on WTO as the source of creating \( \text{PTA} \) variable despite the fact that there are PTAs not notified to WTO. However, without a compliance-enforcing organization such as WTO, a leader’s commitment to an international agreement is not as credible and hence affects national integrity much less.\(^1\) In other words, the electorate’s incentive to punish the leader in case of noncompliance (withdrawal) is relatively weak. Since my model illustrates the accountability that domestic audience hold in formation of PTAs, ignoring non-WTO PTAs does not affect my argument. \( \text{PTA} \) is counted on the basis of signing but not ratification since the leader who signs is the one who faces the intense protectionist oppositions and appeals to the electorate.\(^2\)

In order to derive an accurate measurement for the effect of PTA formation on a leader’s

\(^{1}\) McGillivray and Smith (2006)
\(^{2}\) Data derived from Araseiro et al. (2004)
tenure, I must control for other factors that affect a leader’s tenure. By doing so I am also able to rule out the other possible causal relationship between tenure and PTA: a leader who stays in office longer would have more chances of signing PTAs.

\[ W \] (Winning-coalition size) is the measurement of the size of the winning-coalition (WC), a group of the voters who retain a leader’s power in exchange for private goods. WC size affects the welfare of the coalition members, and thus influences their willingness to support the leader, which indicates that it also functions as a measurement of democracy. Bueno de Mesquita et al. (2003 97, 279) argue that “for a leader in a system with a large winning coalition, even a small exogenous shock can be enough to leave her without sufficient resources to match the challenger’s best offer,” because of her commitment to distribute public goods among the coalition members, which indicates a small amount of private goods available to reward her coalition members in order to defeat the challenger. \[ MAJ \] (Majority) is a variable that represents the average government proportion in the legislature, the number of government seats divided by total seats and hence the relative strength of a government, during a chief executive’s term of office. I include this variable in order to test if formation of a PTA leads to longer tenure regardless of the government’s endogenous stability, since the correlation between tenure and PTA formation may be explained that already strong governments automatically remain in power longer and thus lead to more PTAs. \[ FINITTRM \] (Finite term) is a dichotomous dummy variable indicating whether or not there is a term limit for a chief executive. A term limit, of course, functions to lower the average tenure in a political system. It is theoretically possible to have a democratic “president for life” as long as s/he receives a majority of votes in every election without a term limit, so it is expected that term limits have a significant effect on leaders’ tenure. \[ SYSTEM \] is a categorical variable that captures whether a state is presidential (0), assembly-elected presidential (1), or parliamentary (2). Government under the parliamentary system is responsible to the legislature, which holds the
power to dismiss the government by a motion of no confidence, and thus differences in system should affect leaders’ tenure.\textsuperscript{3} \textit{TRANSPARENCY} also affects a leader’s tenure in a democracy, since policy makers in democracies use transparency as a tool for avoiding “unfair eviction” by signaling the constituents not to wrongly associate a poor economic condition with their extractive policy (Rosendorff and Doces 2006). The arithmetic average of government contract repudiation, expropriation, corruption, law and order, and bureaucratic quality is taken from “International Country Risk Guide.”

As well as the political factors listed above, economic factors are likely to influence leaders’ tenure. All economic variables listed below represent the average annual score for each chief executive (the total score divided by the term of office for each chief executive). \textit{CGDP}, which is GDP per capita using price parity in the 1996 benchmark study, measures countries’ economic conditions. \textit{GROWTH}, an indicator for countries’ fluctuations in economic growth, should be included since political survival in a democratic environment is best achieved by high growth (Bueno de Mesquita et al. 2003, 307). At last, trade openness, the sum of exports and imports divided by GDP per capita, is represented by \textit{OPENC} (in national currencies). It is the proportion of total trade in GDP, which is likely to confound the causality between PTA formation and tenure.\textsuperscript{4}

In addition, I set the minimum Polity level to be 5, in order to limit my model (observations) to countries with sufficient democratic features.\textsuperscript{5} Yet I do not include polity IV in equation [5] and [6] (which will be presented later) because of the similarity with the winning-coalition size in its idea.

\textsuperscript{3} See, e.g., Gallagher et al. (2005; 60-61).
\textsuperscript{4} I use Penn World Table for CGDP and OPENC.
\textsuperscript{5} Polity IV Project.
I expect *PTA*, *MAJ*, *TRANSPARENCY*, *CGDP*, *GROWTH*, and *OPENC* to have coefficients below 1 (indicating that the hazard rate decreases), while *FINITTRM* and *SYSTEM* are expected to have coefficients above 1. The effect of the *W* is not much predictable since an exceptionally small or exceptionally large winning-coalition size provides great welfare, while a middle winning-coalition size provides fairly low welfare (Bueno de Mesquita et al. 2003, 97). Nevertheless, since I limit the model to fairly democratic states (polity IV level $\geq 5$), we can expect to see a coefficient that is below 1.

In addition to equation [5] and [6], I will test models with different sets of variables. Firstly, I will exclude *TRANSPARENCY* due to its lack of availability (only 182 observations available). Secondly, I will substitute *W* with *POLITY*. Finally, I will include all variables including *POLITY*. Further explanations about these models will be presented with statistical results.

**The Weibull Regression Model**

The second model is assumed to follow the Weibull distribution:

$$Eviction\ Rate\ [h(t)] = p t^{p-1} \exp (\beta_1 PTA_i + \beta_2 POLITY_i + \beta_3 MAJ_i + \beta_4 FINITTRM_i + \beta_5 SYSTEM_i + \beta_6 CGDP_i + \beta_7 GDP_i + \beta_8 OPENC + \beta_9 TRANSPARENCY_i + \epsilon),$$

where $p$ is a parameter estimated by the data. The interpretation of the model does not differ from the former model other than the assumption about the baseline hazard (in Weibull, the baseline hazard $h_0(t) = p t^{p-1}$, in contrast to the Cox Proportional-Hazards Model which does not have an
intersection.) It is useful for modeling data with monotone hazard rate that increases (decreases) exponentially with time.\(^6\)

**DATA**

In my panel data, there are 441 chief executives of 84 countries from 1975 to 2004 in my data, but with inclusion of *TRANSPARENCY* and due to several missing values of other variables, my models reduce the number of observation to 172. \(W\) is also limited in availability compared to other variables. Accordingly, I will present models with and without *TRANSPARENCY* and models with *POLITY* substituting \(W\). *POLITY* is a composite indicator of regime types, ranging from 10 (max) to -10 (min). It is derived by subtracting AUTOC score (measurement for the level of autocratic polity) from DEMOC score (measurement for the level of democratic polity).\(^7\)

Democratic elections in domestic politics increase the probability of ratification of international trade agreements (Milner and Rosendorff 1997).

In coding variable *PTA*, a possible error of maximum of one year (half a year on estimated average) between the beginning of a year and the point in the year when a chief executive enters office arises, but I believe that it does not result in a significant statistical inaccuracy. Democratic countries rarely experience a significant change in polity or economic conditions during half a year, and there are few democratic leaders who resign as chief executive; therefore it is plausible to estimate the possible error to be an ignorable level.

\(^6\) STATA PRESS (2005, 229–230)  
\(^7\) JAGGERS AND MARSHALL (2005)
Table 1: Descriptive Statistics

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<tr>
<td>TRANSPARENCY</td>
<td>182</td>
<td>4.946648</td>
<td>1.510431</td>
<td>1.375</td>
<td>7</td>
<td>ICRG**</td>
</tr>
<tr>
<td>CGDP</td>
<td>432</td>
<td>9629.691</td>
<td>7955.921</td>
<td>526.7156</td>
<td>45033.75</td>
<td>Penn World Table**</td>
</tr>
<tr>
<td>GROWTH</td>
<td>439</td>
<td>2.802228</td>
<td>3.618824</td>
<td>-21.259</td>
<td>18.31414</td>
<td>WDI**</td>
</tr>
<tr>
<td>OPENC</td>
<td>435</td>
<td>66.97228</td>
<td>37.8639</td>
<td>7.233061</td>
<td>280.6314</td>
<td>Penn World Table**</td>
</tr>
</tbody>
</table>

Statistical Results

Table 2: The Cox Proportional-Hazards Model

<table>
<thead>
<tr>
<th></th>
<th>Cox Model 1</th>
<th>Cox Model 2</th>
<th>Cox Model 3</th>
<th>Cox Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTA</td>
<td>0.5554872*** (0.0612172)</td>
<td>0.5531616*** (0.0835106)</td>
<td>0.5673075*** (0.0878998)</td>
<td>0.5925484*** (0.0918578)</td>
</tr>
<tr>
<td>WC Size</td>
<td>1.297044 (0.5923373)</td>
<td>1.434328 (1.154708)</td>
<td></td>
<td>0.6449829 (0.6310912)</td>
</tr>
<tr>
<td>POLITY</td>
<td></td>
<td>1.119403*</td>
<td>1.149988*</td>
<td></td>
</tr>
</tbody>
</table>

* For variables with * I coded data based on the sources.
* Logic of Political Survival Dataset
** For variables with ** I took an average value for each leader’s term in office.
** I use robust standard errors in all models of both Cox and Weibull.
<table>
<thead>
<tr>
<th></th>
<th>Weibull Model 1</th>
<th>Weibull Model 2</th>
<th>Weibull Model 3</th>
<th>Weibull Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAJORITY</strong></td>
<td>0.522967**</td>
<td>0.4677703</td>
<td>0.4531113</td>
<td>0.4266541</td>
</tr>
<tr>
<td></td>
<td>(0.166677)</td>
<td>(0.2581281)</td>
<td>(0.2454424)</td>
<td>(0.2343322)</td>
</tr>
<tr>
<td><strong>FINITE TERM</strong></td>
<td>1.415198</td>
<td>1.330639</td>
<td>1.272955</td>
<td>1.346591</td>
</tr>
<tr>
<td></td>
<td>(0.3508217)</td>
<td>(0.4598154)</td>
<td>(0.4101146)</td>
<td>(0.4799425)</td>
</tr>
<tr>
<td><strong>SYSTEM</strong></td>
<td>1.239464 ***</td>
<td>1.397277 ***</td>
<td>1.352101 ***</td>
<td>1.368286 ***</td>
</tr>
<tr>
<td></td>
<td>(0.0704025)</td>
<td>(0.1274781)</td>
<td>(0.1170283)</td>
<td>(0.1225559)</td>
</tr>
<tr>
<td><strong>TRANS-PARENCY</strong></td>
<td>0.8035579 **</td>
<td>0.7841598 **</td>
<td>0.7789796 **</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0775759)</td>
<td>(0.080559)</td>
<td>(0.0791097)</td>
<td></td>
</tr>
<tr>
<td><strong>CGDP</strong></td>
<td>0.9999934</td>
<td>1.000028</td>
<td>1.000021</td>
<td>1.000025</td>
</tr>
<tr>
<td></td>
<td>(9.08E-06)</td>
<td>(0.0000187)</td>
<td>(0.0000181)</td>
<td>(0.0000182)</td>
</tr>
<tr>
<td><strong>GROWTH</strong></td>
<td>0.9399804 ***</td>
<td>0.9235283 ***</td>
<td>0.9259285*</td>
<td>0.9248946*</td>
</tr>
<tr>
<td></td>
<td>(0.0129757)</td>
<td>(0.0375658)</td>
<td>(0.0371876)</td>
<td>(0.0381142)</td>
</tr>
<tr>
<td><strong>OPENNESS</strong></td>
<td>0.9950187 ***</td>
<td>0.9946644 ***</td>
<td>0.9945903 ***</td>
<td>0.9943728 **</td>
</tr>
<tr>
<td></td>
<td>(0.0013509)</td>
<td>(0.0020997)</td>
<td>(0.0021069)</td>
<td>(0.0022267)</td>
</tr>
</tbody>
</table>

Standard Errors in Parentheses
* = Significant at 90%, ** = 95%, *** = 99%

Table 3: The Weibull Model
These results indicate that a PTA has a strong effect on chief executives’ political survival and it is robust. As I expected, the hazard-rate coefficients for PTA in all models are below one, and statistically significant. A hazard rate of less than one suggests that the variable has a negative effect on eviction, hence has a positive effect on survival. SYSTEM is also significant at 99% level in all models of both tables. This suggests that leaders of parliamentary systems are more vulnerable to early eviction. In all models, H₀: β(PTA) = 0 is rejected.

In Model 1 of each table, POLITY and TRANSPARENCY are excluded due to the similarity between W and POLITY in their ideas, measurements for government’s political accountability, and due to the latter’s small number of observations which is close to one third of other variables’. In Model 2, TRANSPARENCY is added and PTA still has a coefficient below one and is significant in both tables. TRANSPARENCY appears to be significant with coefficients below one in all following models, while MAJORITY loses its significance in both tables and GROWTH and OPENNESS have lower significance level in Table 3 (Weibull). However, they are robust to

\[ /\ln_p \]

\[ p \]

Standard Errors in Parentheses

* = Significant at 90%, ** = 95%, *** = 99%
changes in models at least at the 90% level. In Model 3 I substitute \( W \) by Polity, which I assumed to have a similar effect to \( W \). As I expected, the coefficients for \( POLITY \) in both tables are close to those of \( W \) in the Model 2, and importantly, they affect tenure in the same direction. They both affect tenure negatively, indicating that among democracies, the most democratic leaders suffer their strict political accountability. Nevertheless, the fact that \( W \) and \( POLITY \) are not significant at any level suggests that since my data are strictly limited to democratic states, the effect of the level of democracy does not hold significance. In the last model, I control for all variables. While other variables present similar results as the previous models have shown, \( W \) and \( POLITY \) show adverse effects, implying that a large winning-coalition given the same \( POLITY \) level and other controlling factors enhances a leader’s political fortune; however, the insignificance tells that this interpretation is not reliable.

The Kaplan-Meier survivor functions in Graph 1 in the Appendix visually show the effect of \( PTA \) on tenure. Graph 1 derives from Model 1 (the original equation). The survivor functions depict the probability that a chief executive survives in office (y axis) at time \( t \) years (x axis). Keeping other variables constant, the functions indicate that if \( PTA=1 \) the probability of survival decreases at a slower rate than if \( PTA=0 \). The effect of \( PTA \) is clear; the model estimates that after 5 years almost no chief executive survives in office if \( PTA=0 \) whereas approximately 15% of them survive if \( PTA=1 \). Table 4 in the Appendix numerically shows the list of estimated survivor and cumulative hazard functions, which also presents the same insight.

**Conclusion**

Various studies on preferential trading arrangements have focused on interstate relations such as trade flows and commitment problems between states. However, my finding indicates that
institutions that shape international trade cannot be fully explained by looking at relations between states as unitary actors. It rather suggests that institutionalized international trade relationships result from individual leaders’ calculation to maximize their political fortune in the domestic politics. Although there have been studies on the conditions under which preferential trade agreements are formed focusing on domestic politics, analyses on individual leaders’ motives for committing to such agreements have lacked.

Compared to abundant economic analyses on trade agreements, it is obvious that there is not enough attention to political factors on such agreements, especially at the domestic level and its linkage to the international level. Since we rarely observe interstate conflicts in our present world due to the spread of nuclear weapons and the ubiquitous stemming of new democracies, and due to the rapid global economic integration, it is inevitable that interstate economic relations would largely shape international politics in the modern world. I therefore argue that it is necessity for us to focus on political aspects of institutionalized trade agreements. My finding, that policy makers attempt to maximize their terms of office by forming trade agreements, implies that there is much room for political scientists’ investigation in international trade agreements.

However, I need to ensure that these results are not affected by some factors that my model ignores. The most likely mislead of my model stems if it does not successfully rule out an alternative causality between PTA formation and tenure that a durable leader, due to whatever reason that my model omits, has better chance of signing such agreements simply because of longer tenure. I expect that my model sufficiently nullifies the effects of factors that confound in my hypothesis.

I expect other possible drawbacks to stem from my simplified model where only three players are assumed to affect PTA formation and a chief executive’s tenure in office. It is probable that the process of PTA formation varies depending on the country’s political system, represented
by the difference in the legislative power and the power and roles a chief executive possesses between the presidential system and parliamentary system. Although I statistically control for the differences in the political system (SYSTEM variable), my theory simply refers to a president and a prime minister as a “chief executive.” Moreover, I do not take into account the possible negative effect of a PTA on the electorate, such as trade diversion due to the relatively higher tariff levels against other trading partner nations. My model depends on the assumption that the electorate always prefers a PTA, which is, in other words, the nation receives greater welfare from bilateral or multilateral trade agreements than they do from a unilateral set of trade policies.
Appendix

Figure 1

PLAYER 1: CHIEF EXECUTIVE  PLAYER 2: PROTECTIONISTS  PLAYER 3: ELECTORATE

PAYOFFS:
X = CE'S PAYOFF WITH REELECTION
E = ELECTORATE'S CONSTANT PAYOFF BY VOTING
T = ELECTORATE'S PAYOFF WITH PTA
K = PROTECTIONISTS' COST FROM LOSS
P = PROTECTIONISTS' PAYOFF WITH HIGHER TARIFF LEVEL (NO PTA)
C = ELECTORATE'S PAYOFF FROM RETAINING CREDIBLE LEADER IN OFFICE
Graph 1: Kaplan-Meier Survivor Functions

![Graph showing Kaplan-Meier survivor functions with analysis time on the x-axis and survivor probability on the y-axis. The graph compares survivor functions for pta = 0 and pta = 1, adjusted for various factors including system transparency and GDP growth.]

Table 4: List of Estimated Survivor and Cumulative Hazard Functions (Model 2)

<table>
<thead>
<tr>
<th>Time (year)</th>
<th>PTA 0</th>
<th>PTA 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.6519</td>
<td>0.9078</td>
</tr>
<tr>
<td>3</td>
<td>0.1935</td>
<td>0.4552</td>
</tr>
<tr>
<td>5</td>
<td>0.0044</td>
<td>0.0679</td>
</tr>
<tr>
<td>7</td>
<td>0.0008</td>
<td>0.0144</td>
</tr>
<tr>
<td>9</td>
<td>0.0001</td>
<td>0.0059</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>0.0004</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>0.0002</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>0.0001</td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
References


Editors of Stata Press. 2005. Survival Analysis and Epidemiological Tables. College Station, TX: Stata Press.


