The Impact of Leadership Turnover on Relations Between States

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Abstract
We test how domestic political institutions moderate the effect of leadership turnover on relations between states. Deriving hypotheses from recent theoretical work, Bueno de Mesquita et al (2003) and McGillivray and Smith (2000), we examine how leader change affects trading relations between nations using dyadic trade data. Consistent with hypotheses, we find that large winning coalition systems, such as democracies, are relatively immune from the vagaries of leadership change. In such systems, trade remains relatively constant whether leader change occurs or not. In contrast, when winning coalition size is small, as in autocratic states, leadership change profoundly alters relations, causing a decline in trade. Finally we examine instances of poor relations, measured by a significant decline in trade compared to historical levels. As predicted, instances of poor relations are less common between pairs of democracies than other dyadic pairing. Further, leadership turnover in autocratic systems restores trading relations between states. Again the effect of leadership change in democracies is much less pronounced.

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At the time of writing, the US is poised to attack Iraq with the intent of displacing the Iraqi President Saddam Hussein. Whether the attack will actually occur we can not say with certainty but the premise for the war, the removal of a leader, is at the heart of this paper. Since the US has frequently expressed that its actions – the use of military force, the imposition of no fly zones, the imposition of economic sanctions and numerous other measures– are not targeted at the Iraqi people, but rather at Iraq’s leadership and its policies towards the development of weapons of mass destruction, should Saddam Hussein be replaced the prospects for improved relations between Iraq and Western nations looks strong.

While Iraq offers an extreme example, this paper assesses how the turnover of leaders affects relations between states, as measured by trade flows. In particular, drawing on recent theoretical developments (Bueno de Mesquita et. al. 2003; McGillivray and Smith 2000) we examine how domestic institutions and leadership turnover affect dyadic trade flows. Consistent with the theoretical arguments, we find that trade flows between states depends upon the interaction of institutions and leader turnover. States in which leaders require the support of a large proportion of the population to remain in power, such as democracies, have higher trade flows, than the level of trade between states with less representative institutions. This is consistent with previous findings (see, for example, Russett and Oneal 2001). Further, trade between states with representative governments is relatively independent of leadership turnover. In contrast, trade with a nation whose government is less representative is strongly influenced by leader turnover. In general the replacement of an autocratic leader reduces trade flows. However, when relations with an autocratic nation are sour, as measured by trade flows substantially below recent historical averages, the replacement of an autocratic leader
reinvigorates trade.

Over the past decade much attention has been placed on the role of domestic political institutions in shaping relations between states. Perhaps most prominent is the attention given to the democratic peace; the finding that democratic nations do not fight each other (Bremer (1992); Bueno de Mesquita et. al. (1999); Dixon (1994); Lake (1992); Levy (1988); Maoz and Abdolali (1989); Maoz and Russett (1993); Ray (1995); Rousseau, Gelpi, Reiter and Huth (1996)). Although on some particular questions there is some controversy, democracies have been found to fight each other less, trade more, ally more, and join more inter-governmental organizations together (Russett and Oneal 2001). Much theorizing has been done to account for these findings. Several recent theories look intensively at the incentives of individual leaders and how these are shaped by institutional arrangements. These theoretical developments highlight the importance of how individual leaders respond to institutionally created incentives in the formation of policy. It is these theories that provide the point of departure for our investigation into how leader turnover influences the dynamics of trade flows.

We proceed as follows. First, we discuss the theoretical connections between leader turnover, institutions and relations between states. Second, we use these theories to generate hypotheses about the patterns we should expect. Although the theories predict that domestic institutions influence the level of trade between states, these effects have already been extensively investigated by others\(^1\). Therefore,

we focus our attention on the dynamic effect of leadership turnover, which to our knowledge, have not been examined before. Third, we describe our data and methods, and fourth we report our statistical tests. Finally, we conclude with a discussion of the substantive importance of our results.

**Theories of Institutions, Leader Survival and Policy Choice.**

Domestic political institutions shape the incentives and hence the policy choices of political leaders. In particular, leaders want to pick policies that help them survive in office. Although these assumptions form the basic of many theoretical approaches to explaining the effects of institutions on policy formation, we focus our attention on two specific arguments: Bueno de Mesquita et al (2003)\(^2\) theory of the selectorate and winning coalition and McGillivray and Smith’s (2000)\(^3\) theory of leader specific punishments. With respect to policy choice both these theories focus on the ease of leader removal and desire of leaders to keep their jobs. We now describe these arguments and derive their implications for international trade between states.

Bueno de Mesquita et al (hereafter BdM2S2) classify domestic political institutions according to the number of people whose support a leader requires in order to retain power – the winning coalition, W – and the number of people from whom this coalition of supporters is drawn – the selectorate, S. These continuous dimensions of winning coalition and selectorate are logically distinct from traditional categorical classifications of regime types. However, it is useful for illustrating their ideas to place traditional categories of regimes within the W and S framework. Modern liberal democracies

\(^2\) See also Bueno de Mesquita et al 1999, 2002.

\(^3\) See also Guisinger and Smith (2002).
typically have large selectorates (usually all adult citizens) and the winning coalition size is also large
being some portion (often around a half) of the selectorate.\textsuperscript{4} Monarchies and military juntas are
eamples of regimes with both small winning coalitions and small selectorates. Autocratic nations
typically have small W, although they experience considerable variation in the size of S. The types of
policies and the survival of leaders is fundamentally influenced by these institutional variables.

Leaders, assumed to have a fixed set of available resources\textsuperscript{5}, produce two types of goods:
public goods which benefit all members of society and private goods which benefit only those in the
incumbent’s winning coalition. When the winning coalition is small, the incumbent is only beholden to a
small group to retain power. Under such circumstances, the incumbent leader can effectively enrich
members of her coalition through the provision of private goods. Hence, in small coalition systems,
BdM2S2 anticipate leaders foster patronage, cronyism and corruption rather than effective
implementation of public policy. The former secures the leaders’ tenure in office; the latter, while better
policy, harms the leaders’ prospects for survival.

In contrast, if domestic political institutions require a leader to maintain the support of a large

\textsuperscript{4} BdM2S2 claim one of the advantage of their theory is that it distinguishes not just between
different categories of regime type but it also distinguishes between regimes within each category. For
instance, a directly elected president requires 50\% of the selectorate (or at least of the votes cast) to
form a winning coalition, where as the Prime Minister in a single membered district parliamentary
system requires only half the votes in half the districts (25\% of the total) to secure victory. BdM2S2 are
adamant that their scale is not simply a scale for democracy but is rather conceptually and empirically
different. While agreeing with them, we are less dogmatic about this distinction and will for ease of
language often refer to large coalition systems as democracies and small coalition systems as
autocracies.

\textsuperscript{5} The production of these resources are endogenized through the choice of tax policy and
economic effort levels in BdM2S2 (2003). For the current exposition of the theory this aspect is not
especially pertinent and so, for simplicity, it is ignored.
number of individuals in order to keep her job, then leaders promote effective public policy. In these large coalition systems, such as democracies, a leader can not effectively reward her supporters through private goods. There are simply too many people to reward and private goods provision stretches the pool of available resources too thinly. Under these circumstances, a leader can more cost effectively reward her voluminous supporters through public goods provision. The size of the winning coalition determines the type of policies leaders produce.

   Of course in reality all policies have both public and private components. However, this does not diminish the finding that coalition size drives the relative public or private focus of policy provision. For instance, with respect to defense policy, leaders could put procurement contracts out for competitive bids and provide the most effective balance of manpower, training and equipment. Alternatively, a leader could provide lavish officers’ quarters and bloated procurement contracts at the expense of effective training. While both approaches provide some national security – a public good – the former is predominately focused on this goal, while the later promotes the welfare of small groups of officers and defense contractors rather than overall public welfare.

   The larger a leaders’ winning coalition, the greater her focus on public rather than private goods. In addition to determining the quality of policies a leader provides, winning coalition size, especially in conjunction with selectorate size, determines the quantity of policy produced. BdM2S2 assume the primary focus of leaders is to survive. They characterize how many of the available resources a leader must expend in order to match the best possible offer of a challenger. The smaller the coalition size and the larger the selectorate the easier it becomes for leaders to better the offer of any potential challenger. Hence when W is small and S is large leaders survive easily and can skim off
resources for their own discretionary purposes. The derivation of this result is as follows. When the coalition size is small then leaders predominantly rely on private goods to reward their supporters. This means that the welfare of those outside the coalition is substantially lower than that of those within the coalition. This creates a loyalty norm towards the incumbent. Although a potential challenger might offer to spend every available penny as efficiently as possible in order to come to power, having attained office this challenger forms a coalition of size W from the available S potential supporters. The fact that the challenger will pick W supporters from the potential pool of S supporters makes defecting to the challenger risky.\(^6\) Even though a supporter might have been essential in bringing a challenger to office, this does not guarantee him a place in the newly installed challenger’s long term coalition. In contrast, the incumbent has already shown a propensity to retain her supporters in her coalition. Defection to a challenger is risky. This risk is the risk of exclusion from the challenger’s future coalitions. This risk is increasing in S, the size of the pool from which future leaders can choose supporters, and decreasing in W, the number of supporters that a leader needs. Coalition size also influences the cost of future exclusion. When W is large and hence rewards are predominately public in nature, supporters have little to fear from future exclusion. Yet, when W is small and hence rewards are private in nature, the cost of exclusion is high. This combination of risks and costs creates a strong loyalty norm towards leaders in small coalition systems, especially when the selectorate is large. This loyalty norm makes it easy for leaders to survive even if they offer benefits substantially lower than those offered by potential

\(^6\) In BdM2S2’s formal models, leaders have different affinities for each of the possible supporter. In equilibrium, a leader forms a coalition from the W highest affinity members of S. Since less is known about the affinity structure of the relatively unknown challenger, potential defectors can not be certain of being among the top W affinity types.
challengers. In addition to surviving easily, leaders in such systems can skim off resources for their own discretionary purposes.

BdM2S2 use their theoretical framework to explain a vast array of political phenomena\(^7\). While we commend the breadth of their theory’s applicability, for our current purpose we exploit only some of these implications. In particular, BdM2S2 provide a metric to measure the ease of leader removal. The smaller W, the harder leader removal becomes and the greater the discretion leaders have in their policy choices. Indeed, providing leaders in small W systems ensure their supporters receive some amount of private goods, they are unencumbered with respect to the rest of their policy choices. Once this minimal threshold is reached, leaders beholden to only a small numbers of supporters are unconstrained and can adopt whatever idiosyncratic policies they wish. Their political survival is isolated from these policy choices. Indeed, in their “institutional explanation of the democratic peace” BdM2S2 show that for small W leaders, losing wars does not matter providing small W leaders maintain the flow of private goods to their supporters. This is graphically illustrated by returning to the example of Iraq. Despite losing a disastrous war and exposing his country to crippling economic sanctions, Saddam Hussein’s tenure has flourished. Indeed, economic sanctions have enabled him to massively enrich his supporters through the granting of smuggling rights (US department of state: http://usinfo.state.gov/regional/nea/iraq/iraq99k.htm).

\(^7\) For instance, BdM2S2 examine taxation, economic growth, foreign policy, and a host of public goods in such areas as health care, social welfare, education, economic development, and trade, as well as a host of private goods, such as corruption, kleptocracy, and construction. Further they examine the survival of leaders and attempts, both internal and external to alter institutional arrangements.
In contrast, the survival of leaders in large coalition systems is always in jeopardy. Although such leaders focus on policies that promote public welfare so do their potential challengers. Given the relatively small importance of private goods in such systems, there is little loyalty towards the incumbent and if the challenger offers better public policy ideas then the incumbent’s supporters, having little to fear in terms of either the risk or the cost of future exclusion, defect. To survive leaders in large \( W \) systems must always strive for better public policy. They have little wiggle room for their own discretionary policies, and despite their best efforts, such leaders are frequently removed. Indeed, BdM2S2 show at great length, that despite their superior performance, leaders from large coalition systems are removed more frequently than their small coalition counterparts. Repeating their mantra, in large coalition systems good policy is good politics, but in small coalition systems bad policy is good politics.

Having used BdM2S2 arguments to derive a measure of the ease of leader removal, \( W \), and to show that the larger \( W \), the greater leaders work toward maximizing public welfare, we now turn to a discussion McGillivray and Smith’s (2000) model of interstate cooperation. The prisoners’ dilemma is commonly conceived as a metaphor for cooperation (Axelrod (1984); Axelrod and Keohane (1986); Bendor (1987); Downs and Roche (1990); Gourevitch (1996); Milner (1992); Pahre (1994)). In this game each nation chooses whether to cooperate or cheat its trading partner. The game is structured such that although both sides prefer mutual cooperation to neither side cooperating, given that one side cooperates the other prefers to exploit this cooperation rather than also cooperate. Given exploiting the other side is the most preferable outcome and being exploited is the worst possible outcome, both sides have a dominant strategy to cheat. The gains from trade go unrealized.
Although myopically cooperation is impossible, liberal theorists point out the possibility of cooperation by conditioning current behavior on previous outcomes (Axelrod 1984; Baldwin 1993; Gowa 1986; Keohane 1984; Keohane and Nye 1977; Krasner 1983; Milner 1992; Oye 1986; Ruggie 1993). In particular, if nations refuse to cooperate with nations who have previously cheated them then nations can enforce cooperation providing the net present value of being able to cooperate in the future is worth more than the short term gain from cheating a trading partner today. Such mechanisms allow the possibility of cooperation providing nations value the future sufficiently. Unfortunately, the result that cooperation is possible provides no comparative static results beyond patience nations being better able to cooperate. In contrast to this theoretical void, empirical studies have identified strong institutional effect on international cooperation. For instance, Russett and Oneal (2001), amongst many others, show democracies trade more and jointly form more cooperative international agreements and international institutions.

Scholars such as Leeds (1999) have shown that if democratic leaders face audience costs (Fearon 1994) for cheating a trading partner then cooperation can be deeper and more vibrant between democracies. Unfortunately such arguments rely on the assertion that audience costs exist, without any explanation for their origins (Smith 1998; Schultz 1998, 1999, 2002). Relying on the same

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8 Obviously cooperation theory has been developed in a number of ways, for example by letting nations choose the depth of cooperation (Bendor 1987, 1993; Bendor, Kramer, and Stout 1991; Boyd 1989; Lambertini 1997; Molander 1985; Signorino 1996).

primary assumption as BdM2S2, that leaders want to keep their jobs, McGillivray and Smith invoke leader specific punishment (LSP) strategies to explain differences in the depth of cooperation between states and in the process endogenously derive audience costs. In parallel with standard liberal arguments of cooperation, leader specific punishments rely on the threat of reciprocal punishment to enforce cooperation (Keohane 1986; Goldstein 1991). However, unlike traditional ideas, LSP strategies target the specific leader who implemented the policy rather than the nation as a whole. While the punishment remains the same, the removal of future cooperation, the practical consequence of such a strategy is that it allows for the restoration of cooperation once the defecting leader has been replaced. While the consequences of removing Saddam Hussein remains conjecture, the replacement of Serbia’s Slobodan Milosevic normalized the West’s relations with Serbia and was followed by massive waves of aid and investment.

Under LSP strategies, once a leader has cheated, other nations refuse to cooperate with it for as long as the deviating leader remains in power. However, since the punishment is targeted against the actual leader who cheated rather than the nation as a whole, the replacement of this leader reinvigorates relations and enables the restoration of cooperation. Since public welfare is typically enhanced through trade and cooperation, citizens improve their welfare by replacing their leader. Hence when the cost of leader replacement is low (specifically, less than the value of restoring good relations), then citizens replace defecting leaders. In contrast, when the cost of replacing a leader is high then the leader retains power and cooperation ceases. In terms of the BdM2S2 metric, in large coalition systems, following defection, cooperation is restored through the replacement of the defecting leader. In small W systems, the high loyalty norm means defecting leaders survive even though the removal of such a leader would
restore cooperation and improve public welfare. Public welfare is not the key to political success for leaders of small coalition systems.

Beyond providing mechanisms to restore cooperation, LSP strategies prevent the breakdown of cooperation between large coalition systems in the first place. The principle assumption is that leaders want to keep their jobs. In a large coalition system, cheating a trading partner will cost a leader her job; hence she will not cheat. The LSP mechanism allows cooperation under conditions where extant liberal arguments (in particular the use of grim trigger punishments) would suggest cooperation is impossible. In large coalition systems, where leader removal is easy, leaders effectively stake their tenure in office on their cooperation. Since leaders in small coalition systems are not easily removed, and certainly not removed for harming public welfare, their continued tenure in office is not at stake when they decide whether to deviate. Small coalition leaders can not commit themselves to cooperate. Neither need their policy choice be driven by concerns for public welfare. Once their small number of supporters have received their goodies, small W leaders are free to choose policy on whatever idiosyncratic basis they wish.

Having outlined the theoretical underpinning’s for the two arguments, we now derive what these theories predict in the context of trade between states.

The Impact of Leadership Turnover and Domestic Political Institutions on Relations between Nations.

Regime type and cooperation

Nations with large winning coalitions trade and cooperate at higher levels that other pairings of
political systems. Above we showed that, because of the risk to their tenure from cheating, democratic leaders can commitment themselves more effectively to cooperate than leaders in smaller winning coalition systems. Hence trade agreements between democratic nations are more likely to be honored. Further democratic leaders divert less trade than autocratic leaders. Although even leaders of large coalitions provide some private benefits for their supporters, their policy objectives are closer to some notion of public welfare maximizing that those of small coalition leaders, for whom survival depends instead upon enriching a small group of supporters. Since according to micro-economic theory, free trade is generally welfare maximizing and barriers and distortions to trade enable certain producer groups to earn economic rents, we should expect, even beyond any concept of LSP, that large coalition systems pursue free trade policies while small coalition systems tend to protect producer groups that support the incumbent.

In terms of predictions, leaders of large coalition systems are more likely to promote free trade policies than leaders of small coalition systems. Hence, all else equal, large coalition systems trade more than small coalition systems. Further, higher levels of trust and cooperation can be maintained between large coalition systems through LSP. Hence, all else equal, dyadic trade between large coalition systems will be higher than trade between other pairings of nations.

There is already considerable empirical support for these claims, as cited earlier. This is reassuring. Unfortunately, it does little to further our understanding of why institutions affect interactions between states because these results provides no means to distinguish the theoretical ideas advanced here from alternatives explanations. While our tests of trading patterns will further support the predictions that trade is higher between democracies, we do not stress these results. Instead we focus
on how leadership turn over affects trading relations differently by regime type.

**Dynamic patterns of trade and leader turnover.**

When a leader is replaced, the new leader may change policy. However, the extent to which we should anticipate policy shifts depends upon domestic political institutions. The policy choice of leaders in large coalition systems remains relatively constant. Both old and new democrats strive to enhance public welfare through effective public policy. Neither can afford the wrath incurred from cheating a trading partners if they want to survive in office. In contrast, being beholden only to a small winning coalition, autocratic leaders are relatively unconstrained in their policy choices. Such leaders are relatively immune from incurring the ire of other nations, and these leaders are relatively free to pick their policies based on the vagaries of the coalition they pick or other idiosyncracies. There is greater volatility in the policy choices of small coalition leaders relative to large coalition leaders.

In large winning coalition systems leaders are relatively constrained in their policy choice. In order to survive leaders need to enact effective public policy. Although leaders inevitably provide some private goods to their coalition, democratic leaders can not enact policies that damage public welfare or incur the ire of other nations if they want to survive. The turnover of leaders in democracies leaves relations between states relatively unchanged and the goal of perpetuating relatively free trade constant. Of course leadership change brings about some changes in policy. In particular, McGillivray (2003) characterizes how the institutions of the electoral rule and party discipline affect the changes in trade and industrial policies that accompany political change. Her work suggests larger policy changes accompany political change in proportional representation systems than majoritarian ones. We might therefore
expect a change in trade flows accompany a change in leader. Yet, the magnitude of these changes are small. What is more these changes in policy follow fairly predictable patterns. Even relatively newsworthy incidents, such as US President George W. Bush recent imposition of steel restrictions, are relatively small in magnitude and do little to change trading relations on aggregate.

Leadership change in large coalition systems produces only relatively minor (and predictable) policy change. Further, foreign nations know that despite their inexperience in interacting with the new leader, she can be trusted. To violate norms of international behavior or to cheat trading partners costs a leader her job. Hence, an office seeking leader can be relied upon to uphold norms and standards. Trade flows should be fairly insensitive to leadership changes large coalition systems.

In contrast, small coalition leaders have greater policy discretion. Small coalition leaders need not enhance public welfare to survive. Indeed BdM2S2 show it is often to their detriment to do so. Rather such leaders survive by enhancing the welfare of a small coalition of supporters. This suggests the behavior of leaders in small W systems can deviate radically from the policies of their successor. First, when new leaders take office they realign their coalition. One way in which leaders can provide their supporters with private goods is through the rents obtained from trade protection. As discussed above, democrats also use trade policy to reward certain groups. However, since private goods are disproportionately more important in small coalition systems than in large ones, the extent to which leaders are prepared to deviate from welfare enhancing free trade is far greater. What is more, in small W systems since the individual leader’s choice of coalition is largely idiosyncratic the shifts in trade protection that accompany leadership change are relatively unpredictable. Since swings in trade policy are greater in magnitude and less predictable in small W systems, leadership turnover has a greater
impact on trade in autocratic systems. With the ascension of a new leader, patterns of protection shift. This impedes trade. Although over time trade patterns adjust, leader change brings about a decline in trade.

Second, leaders in small coalition systems are less trustworthy than their democratic counterparts. Given the difficulty of domestic removal, autocratic leaders can violate norm and standards of behavior with impunity. While cheating a trading partner costs a democrat her job, it does not injure the political tenure of an autocrat. As the case of sanctions against Iraq shows, in terms of domestic survival it might even help. Given an autocratic leader can act with impunity, others are wary of entering into agreement with such a leader and as such trading relations are harmed. Foreign nations and foreign economic actors risk being exploited by the entering leader. Of course, as with all risk, this chance may or may not be realized. Over time many autocratic leaders establish themselves as reasonable to deal with (from the perspective of external economic actors at least). Hence, although trade, cooperation and other interactions are likely to decline when a new leader assumes power, as the leader establishes a reputation for reasonableness and her policy preferences become established trade somewhat resumes.

Leadership turnover in small coalition systems harms trading relations because it causes a shift in protectionist policies and, because autocrats can act with relative impunity, external actors fear being exploited. Hence when autocrats take office trade declines. Although over time trade is reestablished as trade adapts to the new patterns of protection and as trust grows in the autocrat. Of course trust of an autocrat does not grow to the same extent as trust of a democrat does because while incurring the international communities ire ends a democrat’s political career, an autocrat survives unscathed.
Leadership change in large coalition systems has a much smaller impact on trade and cooperation. First, although under some circumstances political changes alters trade and industrial policy, the magnitude of these effects are smaller than parallel effects in autocracies. Second, since leaders in large winning coalition systems are removed for cheating and this constrain applies from the moment they assume office, democrats are instantly trustworthy and do not renege on international agreements.

The dynamics of leadership turnover differ by regime type. In addition to greater levels of trade and cooperation between large coalition systems, the theory predicts a relatively constant trading relation between large coalition systems. When leadership turnover occurs in small coalition systems trade declines and then often slowly recovers. These systematic differences are testable. However, before doing so we examine the case of sour relations between nations and how leadership change can restore cooperation.

**Tainted Love**

Leader specific punishments allow for the restoration of normal relations. If nations target punishment against the responsible leader rather than the nation she represents for a breach in relations then leadership turnover reinvigorates relations. LSP offer a mechanism to normalize relations. Domestic institutions play a crucial role in shaping the pattern of behavior we expect to see. In large coalition systems leader replacement is easy. If a democrat reneges on agreements, or in other ways violates the norms of international behavior then she will be deposed since her citizens wish to avoid the
termination of cooperation. The leader avoids cheating in the first place. Therefore, we should expect to see few instances of sour relations between democracies.

Since the removal of small coalition leaders is harder and less dependent of public welfare, autocratic leaders can cheat and violate international norms of behavior with relative impunity. It is for this reason that they are less trustworthy. Under LSP, once relations sour as a result of cheating then cooperation between states ceases. Relations remain sour until the offending leader is replaced. Hence if relations are poor, measured here as low trade, then upon the replacement of an autocratic leader, trade should bound back towards historical norms.

Trade can deteriorate between states for a number of reasons. In addition to the breakdown of relations, technological change and harvest failures can significantly impact trade. While all nations experience the latter, the breakdown of relations and trust should disproportionately occur when a trading partner is autocratic. Therefore, instances of marked decline in trade should be more common when one of the trading partners has a small winning coalition than when both nations are democratic.

If trade flows have been harmed by a breakdown of relations, then the deposition of the offending leader rejuvenates trade. Hence, subject to poor trading relations, a restoration of near normal trade levels accompanies leadership turnover in autocratic states. Such an improvement in trade is unlikely to accompany democratic leadership turnover, since it is unlikely that the decline in trade resulted from a breakdown in trade. When trade significantly diminishes between large coalition systems it is more likely to be as a result of change in structural factors.

These theories predict how domestic political institutions interact with leadership turnover to determine the dynamics of relations between states. Although the theory presents the arguments in
terms of cooperation generally, since we test the predictions in the context of trade we now state our hypotheses in these terms.

H1) Institutional effects: Trade is higher between dyads with large winning coalitions than between dyads with other institutions arrangements, all else equal.

H2) Leadership dynamics: The impact of leadership turnover on the trading relations of a state is greater the smaller the winning coalition. In particular, leadership turnover reduces trade.

H3) Sour relations: Relative to small coalition systems, large winning coalition systems are less likely to have poor relations with its trading partners (measured as a significant decline in trade relative to recent historical trading patterns).

H4) Restoration of cooperation: If relations between states are poor then leadership turnover in a small winning coalition system is more likely to restore relations than leadership change in large coalition systems.

Some care is required in interpreting these hypotheses since trade is a dyadic relation, yet many of these hypotheses are stated in terms of a single nation. For instance, although the theory is clear that relations are restored with the removal of the leader responsible for the decline in trust, as part of a systematic test it is hard to designate which leader is responsible. Of course theory suggests that it is the less democratic leader. However as a practical matter these consideration persist. To alleviate many of these problems, we focus primarily on the trade of all nations with the US rather than trade between all possible dyads. From a practical perspective this has numerous advantages. First the US, as the world’s largest trader, has significant and persistent trade with most of the world’s nations. Second,
since the institutions of the US are fairly constant over the entire data, it effectively converts the dyadic
predictions of the theory, which are hard to appropriate code without a larger number of variables, into
more straightforward monadic predictions. Third, the theoretical predictions are relatively novel. Given
that the hypotheses involve relatively complex conditional statements, and to our knowledge there are
no prior tests of the hypotheses, we prefer to enhance the clarity of presentation by examining the US
dyas only. In the appendix we examine similar tests between all pairs of nations.

Data and Methods

Although much of the theory above is applicable to all forms of cooperation and trust, we test
the theories’ predictions in the context of dyadic trade flow. That is for each pair of countries A and B
we measure the sum of the value of trade from A to B and the value of trade from B to A. Specifically,
we use Oneal, Russett and Berbaum’s (2002) measures of dyadic trade flows. These measures draw
on their earlier work (Oneal and Russett 1997, 1999a, b, 2000, 2001), as well as work by Gleditsch
(2002). Measures of Gross Domestic Product, population, military disputes, alliance and distances
which we used as controls are also drawn from these data, although we do not report analyses
including all these controls.

BdM2S2 measure winning coalition size, W, as a composite index based on the variables
REGTYPE, XRCOMP, XROPEN, and PARCOMP from the Arthur Banks’ (2001) data. These data

10 The data examine the period between 1885 and 1992. The years 1914-1920 and 1939-1949 were excluded due to the massive dislocations of the World Wars.
are also commonly reported by Polity IV (Marshall, Jaggers and Gurr 2002). When REGTYPE is not missing data and is not equal to codes 2 or 3 so that the regime type was not a military or military/civilian regime, W receives one point. Military regimes are assumed to have particularly small coalitions and so are not credited with an increment in coalition size through the indicator of W. When XRCOMP, that is, the competitiveness of executive recruitment, is larger than or equal to code 2 then another point is assigned to W. An XRCOMP code of 1 means that the chief executive was selected by heredity or in rigged, unopposed elections, suggesting dependence on few people. Code values of 2 and 3 refer to greater degrees of responsiveness to supporters, indicating a larger winning coalition. XROPEN, the openness of executive recruitment, contributes an additional point to W if the executive is recruited in a more open setting than heredity (that is, the variable's value is greater than 2. Executives who are recruited in an open political process are more likely to depend on a larger coalition than are those recruited through heredity or through the military. Finally, one more point can be contributed to the index of W if PARCOMP, competitiveness of participation, is coded as a 5, meaning that “there are relatively stable and enduring political groups which regularly compete for political influence at the national level” (Polity II, p. 18). This variable is used to indicate a larger coalition on the supposition that stable and enduring political groups would not persist unless they believed they had an opportunity to influence incumbent leaders; that is, they have a possibility of being part of a winning coalition. The indicator of W is then divided by 4 to create a five point scale for W taking the possible values 0, .25, .5, .75, and 1.\textsuperscript{11}

\textsuperscript{11} BdM2S2 also create a measure of selectorate size based on the polity variable LEGSELEC. Although the inclusion of this variable was consistent with expectations, we do not report
We measure the turnover of leaders using BdM2S2 (2003) compilation of leaders. These data record the date each leader entered and left office.\textsuperscript{12} Using these data, we code whether any change in leadership took place in each country in each year. We also used a polychotomous version of this variable that coded for the number of leadership changes that occurred in a particular year (not reported). The results are substantively equivalent which ever measure is used.

Many scholars have modeled trade flows using the gravity model (Deardorff 1995; Tinbergen 1962; Frankel and Roemer 1999; Helpman and Krugman 1985). Until the advent of theoretical justifications, the dominant justifications for the gravity model specification were its intuitive feel and empirically it worked well (see Wall 1999 for a background on the use of the gravity model). The gravity model is called such because of its analogy the strength of pull between objects. The level of trade between A and B depends upon the their distance apart and their masses: populations and economic sizes. A standard specification of the gravity model is thus:

\[
\ln(\text{trade}_{i,t}) = \beta_1 \ln(\text{distance}_{i}) + \beta_2 \ln(\text{GDPA}_{i,t}) + \beta_3 \ln(\text{GDPB}_{i,t}) + \beta_4 \ln(\text{POPA}_{i,t}) + \beta_5 \ln(\text{POPB}_{i,t}) + ... + \epsilon_{i,t}
\]

where i refers to the dyad and t refers to the year, \(\ln(\text{trade})\) is the logarithm of trade, \(\ln(\text{distance})\) is the distance between states, \(\ln(\text{GDPA})\) and \(\ln(\text{POPA})\) refers to the logarithms GDP and population in nation A.

To investigate the impact of regime type scholars include terms reflecting the regime type to the any of these results.

\textsuperscript{12} These data are based primarily on Bueno de Mesquita and Siverson’s (1995) article on the survival of leader. These data were cleaned by Goemans (see Chiozza and Goemans, 2002a,b), and were in turn updated by BdM2S2 (2003).
list of independent variables. The measure of coalition size, \( W \), has a massive and statistically significant impact on trade flows in this specification. While this results is consistent with theoretical predictions and extant work, it is not novel. Rather than center our analysis in the gravity model framework, we examine the dynamic impact of leadership change on trade\(^{13}\). In particular, we assess how institutions, and leader turnover change trade this year relative to trade in the previous year. We use the following basic model:

\[
\ln(\text{trade}_{i,t}) = \beta_1 \ln(\text{trade}_{i,t-1}) + \beta_2 \text{Institutions}_{i,t} + \beta_3 \text{leaderturnover}_{i,t} + \ldots + e_{i,t}
\]

where \( i \) refers to the dyad and \( t \) refers to the year.

Given the logarithmic specification and the inclusion of the lagged dependent variable, coefficients on the institutional and leadership variables can be interpreted as how a unit change in these variables affects the change in trade in year \( t \) relative to year \( t-1 \).

The data are organized by dyads, and we represent the generic dyad as AB. The dyads are organized by the correlates of war projects country code numbers, with the lower numbered nation being A. Since the US is the lowest coded state, the data contains dyads with the US as nation A and every other nation as B. In the main text we focus on the interactions of every state with the US, using only those dyads where nation A is the US. In the appendix we show the results corresponding to all possible dyads. Given the panel nature of the data, we include a fixed effect of each dyad. This allows a unique intercept for each dyadic pair of nations (Green, Soo Yeon and Yoon 2001). Other technique for dealing with cross-sectional time series data (Hsiao 1986; Greene 1988; Beck, Katz, and Tucker

\(^{13}\) For a model dynamic relations between states and a summary of the literature see Crescenzi and Enterline. (2001).
such as GLS and random effect models, produce substantively similar results and so are not reported here.

In order to assess the prediction about the restoration of trade we require variable to indicate when trading relations have soured. We report two: Bad and Sour. Both compare trade in the previous year to recent historical averages. In particular, Bad, a dichotomous measure, is coded one if the logarithm of last year’s trade minus the average logarithm of trade for the preceding five year is less than -.7. Otherwise Bad equals zero. Hence Bad is coded one when last year’s trade was approximately only half of the historical five year average. In contrast, Sour is a continuous measure of poor relations. It is calculated as the ten year historical average of the logarithm of trade minus the logarithm of trade last year. Hence when trade was lower last year relative to the ten year historical average, Sour takes position values.

Table 1 summarizes the definitions of key variables.

Results

Institutional impacts on the level of trade. In Table 2 we examine the changes in dyadic trading relations involving the US (treated as nation A in the AB dyad). Specifically, the logarithm of dyadic trade is explained by the logarithm of prior trade, nation B’s institutions, leadership turnover in nation B and control variables.

Models 1 and 2 in Table 2 show a statistically significant positive coefficient on the size of winning coalition in nation B. This implies that US trade with large coalition systems grows faster than
US trade with small coalition systems. It is worth illustrating the impact of these effects before proceeding. Suppose dyadic trade last year was 1. Then ignoring for the moment the impact of leadership change, in model 2 the predicted trade for this year (\( \text{trade}_{AB} = \exp(0.172 + 0.969 \cdot \ln(1) + 0.051 \cdot \text{WB}) \)) is 1.19 if \( \text{WB} = 0 \) and 1.25 if \( \text{WB} = 1 \). Of course these trade figures are given in nominal rather than constant dollars so some of this growth is inflation rather than a true increase in trade. Despite this, the results show that US trade with democratic systems grows faster than trade with autocratic systems. This result bolsters the extant literature that highlights the impact of institutions on trade.

Model 3 includes the standard gravity model controls of logarithm of population and GDP. Given our fixed effect specification, we can not include controls for distance or contiguity, since these factors do not vary within dyads. The inclusion of these controls reduces the impact of winning coalition size on trade, indeed the coefficient becomes insignificant. A few caveats are worthy of consideration before dismissing the impact of institutions. First, in a broader range of models than those reported the inclusion of these controls did not diminish the impact of \( \text{WB} \) to the extent shown in model 3. Second, winning coalition size is strongly related to GDP (BdM2S2 2003). Since GDP is measured with much greater refinement than BdM2S2's coarse coding of coalition size, it should be that GDP dominates \( \text{WB} \) in predictive power. Third, since our specification includes fixed effects for each dyad then the coefficient on \( \text{WB} \) is effectively only estimated in dyads where the institutions in nation B change. If nation B is democratic throughout the data, then the effect of democracy in nation B is subsumed into the dyad specific intercept. Fourth, the theory predicts institutions modify the impact of leadership change. Given that the direct impact of the institutional variable is frequently subsumed by the fixed
effect, it is more fruitful to examine these dynamic hypotheses. It is to these tests that we now turn.

**Leadership dynamics and the impact of institutions.**

Leadership change can be expected to reduce trade, since all else equal it increases uncertainty and risk. This is shown in model 1 (reported in Table 2). The statistically significant coefficient of -.039 means that if leadership change occurs in nation B then trade between the US and nation B is reduced by around 4%. Leadership change clearly impacts trading relations, yet the theory predicts the impact is highly dependent on institutions.

When the winning coalition is large and hence leaders are beholden to a significant portion of the population, leaders work to further public welfare through free and stable trade. Further, democratic leaders are more trustworthy and honor agreements. In contrast, leaders in small winning coalition systems survive by privileging a small group of supporters rather than by enhancing public welfare. Such leaders are apt to shift trade policy to privilege their supports. Additionally, since such leaders are less accountable, they can violate international norms and agreements with impunity. With lower constraints, autocratic leaders are less trustworthy and so, until they have shown themselves reasonable, trade and other cooperative activities diminish with the ascension of new leaders.

Models 2 and 3 (Table 2) bare out these predictions. The coefficient on the change in leader in nation B variable is -.087 in model 2 and the interaction of this variable with coalition size is 0.077. Therefore, in autocratic systems with small winning coalitions, the net impact of leadership change is a coefficient of -.087 which corresponds to roughly a 9% decline in trade. In contrast, large coalition systems experience a net coefficient of -.01 ( -.087+.077), an approximate one percent decline in trade.
In a joint hypothesis test this net coefficient is insignificantly different from zero, yet a joint hypothesis that both the leadership change variable and its interaction with WB are simultaneously both zero is significant at the 1% level. This pattern of joint hypotheses tests persist throughout the analyses. The impact of leadership change is large in small coalition systems. The impact of leadership change on trade between democracies is insignificant. These results provide strong support for the theoretical predictions and are, we believe, novel.

Model 3, which includes additional control variables, supports the same conclusion as Model 2. Leadership turnover harms trade in small winning coalition systems, but has no statistically significant impact in large coalition systems. Although the impact is slightly lower in the presence of these control variables, the result are statistically significant. This is a good time to discuss the over all robustness of these results. The inclusion of other control variables, such as additional multiple lags of ln(trade), interstate conflict, domestic conflict or BdM2S2 measure of selectorate size does not substantively change the results. Neither does the use of alternative cross-sectional time series methods. The results presented here examine only trade including the US. In the appendix (Table 5), we reassess these results in the context of all dyads. It would appear that in autocratic nations a change in leader reduces trade, while in a democracy a change in leadership has a negligible impact on trading relations.

**Incidences of Sour Relations.** The leader specific punishments described by McGillivray and Smith (2000) suggest that if nations hold foreign leaders, rather than the nation they represent, accountable for policy choices then leader turnover provides a mechanism to restore tarnished relations between nations. In particular, if leaders play LSP strategies and refuse to cooperate with any leader who has
cheated them, but cooperate with successors, then once the cheating leader is removed cooperation restarts. When leader removal is easy this mechanism encourages citizens to remove leaders who cheat. However, precisely because of this possibility democratically accountable leaders avoid incurring the ire of foreign nations.

It is tempting to test whether a souring of relations harms tenure in office, yet such a test is flawed (Schultz 2001). Since leaders wish to retain their jobs they avoid contingencies that harm their tenure in office. In the sample of cases where democrats experience a decline in trade the decline is unlikely to be a result of the democrat’s behavior. Any direct test for audience costs leads to false inferences. Therefore the LSP theory must be tested on other dimensions.

Although the trade between states can vary for many ‘natural’ reasons, such as crop failures or technological change, the termination or reduction of trading relations as a result of a leader’s actions is more likely to take place when the leader is from a small rather than large winning coalition system. Table 3 provides a test of this prediction. It examines the number of instances of bad trade relations for dyadic trade with the US as a function of the institutions of nation B, where the definition of Bad is that trade is less than half of the historic average over the previous five years. As Table 3 reveals, bad trading relations are more common when coalition size is small. Of the 565 dyad years in which nation B had the smallest winning coalition (W=0), 20 cases (or 3.5%) experienced Bad relations. In contrast, of the 1415 dyad year in which nation B was of the largest winning coalition category (W=1), 24 (or 1.7%) experienced Bad relations. A chi-squared test suggests these differences would arise by random chance with a probability of .018. A regression of the continuous measure of poor relations, Sour, on coalition size also supports this prediction. Coalition size strongly influences the likelihood of
sour relations (analysis not reported).

It would appear that the US is indeed more likely to experience poor trade with small coalition nations than large coalition nations.

**Restoring Sour Relations**

If sour relations are the result of a leader’s devious behavior then trading relations should be reinvigorated when the leader is replaced. While this theoretical statement is straightforward, testing it is more complex. Firstly, instances of poor relations need not be related to the behavior of the leader and might instead be the result of a harvest failure. In such a case we should expect a restoration of trade the following year. Since we have no way to identify when a leader’s actions, rather than ‘natural’ circumstances, caused a decline in trade we should expect, on average, a return to normal relations in the data: regression to the mean. Under LSP, leader replacement of a cheating leader reinvigorates trade. Yet, unfortunately, we do not know in general which leader is responsible for the deterioration of trade. This creates a second problem. In examining whether the removal of a leader who has previous cheated normalizes relations we are averaging over both cheating and innocent leaders. The possibility of ‘natural’ decline in trade and the inability to assign responsibility to a particular leader reduce our ability to observe whether leader change has its predicted effects. Fortunately, we are guided by theory. According to LSP theory, and supported by the evidence in Table 3, democratic leaders are less likely to cheat than autocratic leaders. Therefore, the replacement of a large coalition leader should do less to restore trade, since it is unlikely this leader was responsible for the decline in trade in the first place.

Table 4 reports analyses that test the LSP predictions. These analyses as similar to those in Table 2, but with the inclusion of variables to reflect poor relations. Model 4 includes the dichotomous
measure of poor relations, Bad, as well as its interactions with leadership change in nation B, coalition size in nation B and its interaction with both WB and leader turnover. Model 5 includes the same interactions but measures poor relations using the continuous measure, Sour.

Although not all the coefficients are significant, the analyses support predictions. The significant positive coefficient on both Bad and Sour indicate the regression to the mean phenomena. If trade experienced a random shock, such as a harvest failure, then it is likely to right itself. The coefficient of Bad means that if trade relations were poor last year then they should improve by about 14% with year.

Under LSP, deposition of the leader responsible for a deterioration in relations restores cooperation. The interaction between leader change in nation B and Bad captures this effect. The positive coefficient supports the prediction. If nation B’s leader is replaced, and trade last year was bad then trade increases by about 30% over what would happen without leader replacement. While this effect is massive we suspect it underestimates the true effect. In our research design we can not identify whether leader A or leader B is responsible for the breakdown in cooperation, neither can be rule out a ‘natural’ dip in trade.

Thus far, with respect to the restoration of trade, we have ignored the impact of domestic institutions. Since leaders from large coalition systems are likely to lose their jobs for violating international norms or otherwise impeding trade relations, they are less likely to do so. If relations are poor between democracies then it is unlikely that it was because either leader cheated. Hence the removal of a democratic leader is less likely to restore cooperation. The negative coefficient on the Bad*ΔLeaderB variable confirms this predict. While the net effect of replacing an autocratic leader in nation B when relations were bad was a coefficient of 0.297, the equivalent coefficient when B is a
large coalition is -.103. Indeed, this suggests replacing a democrat in nation B makes it harder to restore cooperation. This pattern is repeated in Model 5 where the continuous measure of poor relations is used.

The variable Bad*WB_{t-1} allows us to assess whether, independent of leader turnover, small or large coalition systems restore relations faster. The theory does not speak directly to this question, except in the fact that poor relations between democratic states are more likely to be a result of shocks than leader behavior. The positive coefficient suggests large coalition systems restore cooperation better than small coalition systems. However, this result is contradicted by model 5 where the reverse is true.

Models 4 and 5 support the conclusion that leadership turnover restores poor relations, but less so when large coalition systems are involved. While consistent with predictions these results do require strong qualifications. Many of the coefficient estimates are not statistically significant. While worrisome, this is less problematic that it might at first seem since in most cases we are interested in joint hypothesis tests that leadership turnover affects trade and that the effect of turnover is smaller for large coalition systems. Further these results are strongly supported by tests looking at all dyads which are reported in the appendix.

**Conclusions**

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14 For instance, the joint hypothesis test that bad and it three interaction term are all simultaneously zero has an F test of F(4,6678)=7.58 which is significant at Pr =.0000. While combined these factors clearly matter, the joint hypothesis test that the sum of these four coefficients is zero yields, F(1,6678)=.70 which is insignificant: the removal of a leader in a democrat state with bad relations has no appreciable effect of trade.
Through the examination of dyadic trade this paper assesses the impact of leadership turnover and domestic institutions on relations between states. The results suggest that the extent to which leader change influences relations between states strongly depends upon the institutional context under which leaders govern. When leaders are easily removed and political survival is closely related to the provision of public goods, then trading relations are robust to leadership change. In contrast, when leaders are beholden only to a small group of supporters, leadership change has great impact on trading relations. Generally, the replacement of small coalition leaders harms trade, although when trading relations are poor (substantially below recent historical levels) the replacement of a small coalition leaders offer the prospect for normalized relations.

The statistical analyses presented endeavored to test hypotheses derived from two specific theories: BdM2S2 (2003) selectorate theory and McGillivray and Smith’s (2000) theory of Leader Specific Punishments. While necessarily focused on these specific goals, this paper recognizes the growing trend towards examining international politics at the level of the leader. This is not to say that this paper examines the individual traits of leaders, but rather recognizes that leaders serve within specific institutional contexts. Institutions shape the incentives of leaders and hence the decisions and policies of leaders. In both the theories considered, the primary goal of leaders was to retain power. The institution of winning coalition size affected no only whether leaders can achieve this goals but also the policy routes they choose in their attempts. Domestic incentives profoundly alter the playing out of international relations.

Since the path breaking explorations into international outcomes and the survival of political leaders by Bueno de Mesquita, Siverson and Woller (1992; Bueno de Mesquita and Siverson 1995)
scholars are increasingly focusing on individual leaders as the unit of analysis. We believe this movement towards a finer grained unit of analysis offer the prospect for great leaps forward in our understanding of international relations. While the legacy of theories based on individual decision making is long, too often the focus on international events has led theorists to aggregate up the actions of individuals to examine the behavior of nations. Explaining macro-phenomena is a laudable goal. Although this direction has allowed consideration of the most salient questions in international relations, it has ignored the opportunity for theory testing. In common to many other arguments, the theories considered here suggest democratic nations behave differently to autocratic ones. The data support such a conclusion, yet this results fails to distinguish the theories under consideration from the myriad of contending explanations at the level of institutional differences between states. However, at the leader level of analysis the theories under consideration make numerous additional predictions which distinguish them from other theories of democratic behavior, such as normative considerations. Through an increased focus on leader level data we believe international relations scholars will make great advances in sorting through the multitudes of potential causal explanations.

Appendix

In the main text we examined only dyadic relations involving the US. As explained above this simplified model specification and presentation. Here we briefly present analyses for all dyads. Table 5 is analogous to Table 2, considering the general effect of leadership turnover and regime type. The restoration of relations results, the analogy of Table 4, are presented in Tables 5 and 6.

The principal problem with considering all dyads is that, unlike the tests in the main text,
institutions vary in both country of the generic dyad AB. This makes it harder to assess the impact of institutions and turnover because it is more ambiguous as to whether the dynamic patterns of trade are driven by the institutions and changes in nation A or those in nation B. Model A1, reported in Table 5, is analogous to Model 2, however to reflect that in the context of all dyads the institutions of nation A are no longer held fixed, leadership change and institutional variables are included for nation A also. As Table 5 shows, the effects of leadership change and its interaction with W on trade are the same as those reported in the main text. Although across all dyads the aggregate effects of leadership change are weaker, this is unsurprising since for many countries dyadic trade flows are inconsequential.

Model A1 treats nation A and nation B in the dyad AB differently, estimating separate coefficients for each. However, unless one believes the ordering of COW country codes is related to systematic biases there is no reason to suspect that the impact of leader change and institutions in the lower indexed nation is different from those in the higher indexed country. Model A2 repeats the analysis in Model A1, a fixed effect panel model, with the additional restriction that the coefficients for nation A equal those for nation B. For instance the effect of coalition size in nation A (WA, .050) is the same as its effect for nation B (WB, .050). To emphasize this, we write ditto for all variables relating to nation B to indicate they have the same value as those for nation A.

Tables 6 and 7 assess the restoration of poor relations. Table 6 uses the dichotomous measure Bad and a model specification analogous to Model 4, while Table 7 uses the continuous measure Sour and a model specification analogous to Model 5. Models A4 and A6 use the restriction that coefficients associated with nation A are the same as those associated with nation B. These models support the substantive conclusions articulated in the main text.
References


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Signorino, Curtis S. 1996. Simulating international cooperation under uncertainty. *Journal of Conflict...*
Resolution, Mar96, 40(1): 152-206


Table 1: Definitions of Key Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln(trade&lt;sub&gt;AB,t&lt;/sub&gt;)</td>
<td>Natural logarithm of trade value between nations A and B in year t in current $US</td>
</tr>
<tr>
<td>Lagged Trade</td>
<td>Natural logarithm of trade value between nations A and B in year t-1 in current $US</td>
</tr>
<tr>
<td>WB</td>
<td>Winning coalition size in nation B in year t</td>
</tr>
<tr>
<td>ΔLeaderB&lt;sub&gt;t&lt;/sub&gt;</td>
<td>Change in leadership in nation B during year t</td>
</tr>
<tr>
<td>ΔLeaderB&lt;sub&gt;t&lt;/sub&gt;*WB&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>Interaction of leadership change with prior institutions (WB in year t-1).</td>
</tr>
<tr>
<td>Ln(PopulationA)</td>
<td>Natural logarithm of population in nation A in year t</td>
</tr>
<tr>
<td>Ln(GDPA)</td>
<td>Natural logarithm of Gross Domestic Product in nation A in year t measured in current $US</td>
</tr>
<tr>
<td>Bad</td>
<td>Dichotomous variable of bad trading in previous year. Bad&lt;sub&gt;t&lt;/sub&gt;=1 if tr&lt;sub&gt;t-1&lt;/sub&gt; - (tr&lt;sub&gt;t-6&lt;/sub&gt;+tr&lt;sub&gt;t-5&lt;/sub&gt;+tr&lt;sub&gt;t-4&lt;/sub&gt;+tr&lt;sub&gt;t-3&lt;/sub&gt;+tr&lt;sub&gt;t-2&lt;/sub&gt;)/5 &lt; -0.7 and Bad&lt;sub&gt;t&lt;/sub&gt; =0 else, where tr=Ln(trade&lt;sub&gt;AB,t&lt;/sub&gt;). I.e. trade last year was less than about half of the historical average over the previous five years.</td>
</tr>
<tr>
<td>Sour</td>
<td>Continuous measure of sour trading relations in the previous year relative to the previous ten years:</td>
</tr>
</tbody>
</table>
Table 2: Effect of Institutions and Leadership Turnover on Dyadic Trade (US dyads only).

<table>
<thead>
<tr>
<th>Fixed effect (dyad) panel regression</th>
<th>Dependent Variable: $\text{Ln}(\text{trade}_{AB,t})$, where AB represents the dyad US and nation B, and t represents year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
</tr>
<tr>
<td>Lagged Trade $\text{Ln}($trade$_{i,t-1}$)</td>
<td>.969** (.003)</td>
</tr>
<tr>
<td>$\Delta \text{LeaderB}_t$</td>
<td>-.039** (.015)</td>
</tr>
<tr>
<td>WB</td>
<td>.065* (.029)</td>
</tr>
<tr>
<td>$\Delta \text{LeaderB}_t \times \text{WB}$</td>
<td></td>
</tr>
<tr>
<td>$\text{Ln}($Population$_A)$</td>
<td></td>
</tr>
<tr>
<td>$\text{Ln}($Population$_B)$</td>
<td></td>
</tr>
<tr>
<td>$\text{Ln}(\text{GDP}_A)$</td>
<td></td>
</tr>
<tr>
<td>$\text{Ln}(\text{GDP}_B)$</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>.172 (.021)</td>
</tr>
<tr>
<td>Observations</td>
<td>6866, 180 dyads</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.967</td>
</tr>
<tr>
<td>F test: $\Delta \text{LeaderB}_t \times \text{WB}+\Delta \text{LeaderB}_t=0$</td>
<td>F(2,6682)=4.77 Pr.=.6584</td>
</tr>
<tr>
<td>F test: $\Delta \text{LeaderB}_t \times \text{WB}=0$ and $\Delta \text{LeaderB}_t=0$</td>
<td>F(2,6682)=.20 Pr.=.0085</td>
</tr>
</tbody>
</table>

** significant at 1% level in one tailed test
* significant at 5% in a one tailed test.
Table 3: How Coalition Size Affects Incidences of Bad Trading Relations (US dyads only)

<table>
<thead>
<tr>
<th>Winning Coalition Size (of the US’s trading partner), W</th>
<th>0</th>
<th>.25</th>
<th>.5</th>
<th>.75</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>State of Trading Relations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bad=0</td>
<td>545</td>
<td>1462</td>
<td>1948</td>
<td>1709</td>
<td>1391</td>
</tr>
<tr>
<td>Bad=1</td>
<td>20</td>
<td>45</td>
<td>59</td>
<td>33</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>565</td>
<td>1507</td>
<td>2007</td>
<td>1742</td>
<td>1415</td>
</tr>
</tbody>
</table>

Chi squared (4 d.o.f) = 11.93 (Pr. = 0.018)
Table 4: Sour Trading Relations and How Institutions and Leadership Turnover Can Restore Relations (US dyads).

<table>
<thead>
<tr>
<th>Fixed effect (dyad) panel regression</th>
<th>Dependent Variable: Ln(trade$_{AB,t}$), where AB represents the dyad of nation A and nation B, and t represents year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 4</td>
</tr>
<tr>
<td></td>
<td>Model 5</td>
</tr>
<tr>
<td>Lagged Trade</td>
<td>.971** (.003)</td>
</tr>
<tr>
<td>Ln(trade$_{i,t-1}$)</td>
<td>.971** (.005)</td>
</tr>
<tr>
<td>ΔLeaderB$_t$</td>
<td>-.095** (.033)</td>
</tr>
<tr>
<td>WB</td>
<td>.047 (.031)</td>
</tr>
<tr>
<td>ΔLeaderB$_t$*WB</td>
<td>.088* (.046)</td>
</tr>
<tr>
<td>Bad</td>
<td>.139* (.068)</td>
</tr>
<tr>
<td>Bad*WB$_{t-1}$</td>
<td>.081 (.118)</td>
</tr>
<tr>
<td>Bad*ΔLeaderB$_t$</td>
<td>.297* (.175)</td>
</tr>
<tr>
<td>Bad*ΔLeaderB$<em>t$*WB$</em>{t-1}$</td>
<td>-.400 (.257)</td>
</tr>
<tr>
<td>Sour</td>
<td>.087** (.019)</td>
</tr>
<tr>
<td>Sour*WB$_{t-1}$</td>
<td>-.079* (.039)</td>
</tr>
<tr>
<td>Sour*ΔLeaderB$_t$</td>
<td>.009 (.050)</td>
</tr>
<tr>
<td>Sour*ΔLeaderB$<em>t$*WB$</em>{t-1}$</td>
<td>-.108 (.090)</td>
</tr>
<tr>
<td>Constant</td>
<td>.167 (.022)</td>
</tr>
<tr>
<td></td>
<td>.227 (.029)</td>
</tr>
<tr>
<td>Observations</td>
<td>6866, 180 dyads</td>
</tr>
<tr>
<td></td>
<td>4330, 161 dyads</td>
</tr>
<tr>
<td>R$^2$</td>
<td>.9673</td>
</tr>
<tr>
<td></td>
<td>.9713</td>
</tr>
</tbody>
</table>

** significant at 1% level in one tailed test  
* significant at 5% in a one tailed test.
Table 5: Effect of Institutions and Leadership Turnover on Dyadic Trade (All dyads).

<table>
<thead>
<tr>
<th>Fixed effect (dyad) panel regression</th>
<th>Dependent Variable: Ln(trade\textsubscript{AB,t}), where AB represents the dyad of nation A and nation B, and t represents year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model A1</td>
<td>Model A2 Constrained such that variable relating to nation A equal those of nation B (i.e WA=WB)</td>
</tr>
<tr>
<td>Lagged Trade Ln(trade\textsubscript{t-1})</td>
<td>.917** (.0007)</td>
</tr>
<tr>
<td>(\Delta\text{LeaderA}_t)</td>
<td>-.014** (.004)</td>
</tr>
<tr>
<td>WA</td>
<td>.030** (.004)</td>
</tr>
<tr>
<td>(\Delta\text{LeaderA}_t\times\text{WA})</td>
<td>.004 (.005)</td>
</tr>
<tr>
<td>(\Delta\text{LeaderB}_t)</td>
<td>-0.014** (.004)</td>
</tr>
<tr>
<td>WB</td>
<td>.068** (.004)</td>
</tr>
<tr>
<td>(\Delta\text{LeaderB}_t\times\text{WB})</td>
<td>.013* (.006)</td>
</tr>
<tr>
<td>Constant</td>
<td>.079 (.003)</td>
</tr>
<tr>
<td>Observations</td>
<td>390003, 15850 dyads</td>
</tr>
</tbody>
</table>

** significant at 1% level in one tailed test
* significant at 5% in a one tailed test.

Ditto indicates that the variable associated with nation B is the same as the variable associated with nation A.
Table 6: Bad Trading Relations and How Institutions and Leadership Turnover Can Restore Relations (All dyads).

<table>
<thead>
<tr>
<th>Fixed effect (dyad) panel regression</th>
<th>Dependent Variable: Ln(trade$_{AB,t}$), where AB represents the dyad of nation A and nation B, and t represents year</th>
<th>Model A3</th>
<th>Model A4 Constrained such that variable relating to nation A equal those of nation B (i.e WA=WB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lagged Trade Ln(trade$_{i,t-1}$)</td>
<td>.917** (.001)</td>
<td>.917** (.001)</td>
<td></td>
</tr>
<tr>
<td>ΔLeaderA$_t$</td>
<td>-.014** (.004)</td>
<td>-.014** (.003)</td>
<td></td>
</tr>
<tr>
<td>WA</td>
<td>.029** (.004)</td>
<td>.049** (.003)</td>
<td></td>
</tr>
<tr>
<td>ΔLeaderA$_t$ * WA</td>
<td>.005 (.005)</td>
<td>.009* (.004)</td>
<td></td>
</tr>
<tr>
<td>ΔLeaderB$_t$</td>
<td>-.012** .004</td>
<td>ditto</td>
<td></td>
</tr>
<tr>
<td>WB</td>
<td>.069** (.004)</td>
<td>ditto</td>
<td></td>
</tr>
<tr>
<td>ΔLeaderB$_t$ * WB</td>
<td>.013* (.006)</td>
<td>ditto</td>
<td></td>
</tr>
<tr>
<td>Bad</td>
<td>.095** (.010)</td>
<td>.083 (.007)</td>
<td></td>
</tr>
<tr>
<td>Bad * WA$_{t-1}$</td>
<td>.025** (.009)</td>
<td>.016* (.008)</td>
<td></td>
</tr>
<tr>
<td>Bad * ΔLeaderA$_t$</td>
<td>.028 (.032)</td>
<td>-.014 (.021)</td>
<td></td>
</tr>
<tr>
<td>Bad * ΔLeaderA$<em>t$ * WA$</em>{t-1}$</td>
<td>-.085* (.045)</td>
<td>-.043 (.031)</td>
<td></td>
</tr>
<tr>
<td>Bad * WB$_{t-1}$</td>
<td>-.010 (.017)</td>
<td>ditto</td>
<td></td>
</tr>
<tr>
<td>Bad * ΔLeaderB$_t$</td>
<td>-.061* (.031)</td>
<td>ditto</td>
<td></td>
</tr>
<tr>
<td>Bad * ΔLeaderB$<em>t$ * WB$</em>{t-1}$</td>
<td>-.008 (.045)</td>
<td>ditto</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>.078 (.003)</td>
<td>.024 (.001)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>390003, 15850 dyads</td>
<td>390003, 15850 dyads</td>
<td></td>
</tr>
</tbody>
</table>

** significant at 1% level in one tailed test
* significant at 5% in a one tailed test.

Ditto indicates that the variable associated with nation B is the same as the variable associated with nation A.
Table 7: Sour Trading Relations and How Institutions and Leadership Turnover Can Restore Relations (All dyads).

<table>
<thead>
<tr>
<th>Fixed effect (dyad) panel regression</th>
<th>Dependent Variable: Ln(trade_{AB,t}), where AB represents the dyad of nation A and nation B, and t represents year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model A5</td>
</tr>
<tr>
<td></td>
<td>Model A6 Constrained such that variable relating to nation A equal those of nation B (i.e WA=WB)</td>
</tr>
<tr>
<td>Lagged Trade Ln(trade_{i,t-1})</td>
<td>.933** (.001)</td>
</tr>
<tr>
<td></td>
<td>.966** (.001)</td>
</tr>
<tr>
<td>ΔLeaderA_t</td>
<td>-.001 .006</td>
</tr>
<tr>
<td></td>
<td>-.007* (.003)</td>
</tr>
<tr>
<td>WA</td>
<td>-.006 .005</td>
</tr>
<tr>
<td></td>
<td>.022** (.004)</td>
</tr>
<tr>
<td>ΔLeaderA_t*WA</td>
<td>-.015* (.008)</td>
</tr>
<tr>
<td></td>
<td>-.004 (.006)</td>
</tr>
<tr>
<td>ΔLeaderB_t</td>
<td>-.009 (.006)</td>
</tr>
<tr>
<td></td>
<td>ditto</td>
</tr>
<tr>
<td>WB</td>
<td>.054** (.006)</td>
</tr>
<tr>
<td></td>
<td>ditto</td>
</tr>
<tr>
<td>ΔLeaderB_t*WB</td>
<td>.009 (.006)</td>
</tr>
<tr>
<td></td>
<td>ditto</td>
</tr>
<tr>
<td>Sour</td>
<td>.251** (.005)</td>
</tr>
<tr>
<td></td>
<td>.266** (.005)</td>
</tr>
<tr>
<td>Sour*WA_{t-1}</td>
<td>-.052** (.006)</td>
</tr>
<tr>
<td></td>
<td>-.043** (.004)</td>
</tr>
<tr>
<td>Sour*ΔLeaderA_t</td>
<td>.060** (.009)</td>
</tr>
<tr>
<td></td>
<td>.020** (.006)</td>
</tr>
<tr>
<td>Sour<em>ΔLeaderA_t</em>WA_{t-1}</td>
<td>-.097** (.013)</td>
</tr>
<tr>
<td></td>
<td>-.054** (.009)</td>
</tr>
<tr>
<td>Sour*WB_{t-1}</td>
<td>-.057** (.006)</td>
</tr>
<tr>
<td></td>
<td>ditto</td>
</tr>
<tr>
<td>Sour*ΔLeaderB_t</td>
<td>-.018* (.009)</td>
</tr>
<tr>
<td></td>
<td>ditto</td>
</tr>
<tr>
<td>Sour<em>ΔLeaderB_t</em>WB_{t-1}</td>
<td>-.0122 (.013)</td>
</tr>
<tr>
<td></td>
<td>ditto</td>
</tr>
<tr>
<td>Constant</td>
<td>.156 (.004)</td>
</tr>
<tr>
<td></td>
<td>.039 (.001)</td>
</tr>
<tr>
<td>Observations</td>
<td>237360, 12494 dyads</td>
</tr>
<tr>
<td></td>
<td>237360, 12494 dyads</td>
</tr>
</tbody>
</table>

** significant at 1% level in one tailed test
* significant at 5% in a one tailed test.

Ditto indicates that the variable associated with nation B is the same as the variable associated with nation A.