

Rivalries in the Middle East: A Time Series Analysis

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Overview

This study investigates the evolution of rivalries in the Middle East. The Middle East is defined comprehensively, as a region, to include important actors on the geographic periphery such as Pakistan and states in North Africa. A rivalry is “a situation of long-standing, historical animosity between two entities with a high probability of serious conflict or crisis” (Valeriano 2012: 63; see also Diehl and Goertz 2012). “Rivalries and rivalry fields”, as Thompson (2016a) observes, “tell us something about how regions function.” In addition, rivalries account for more than 75% of interstate wars since 1816 (Colaresi, Rasler and Thompson 2008).

For such reasons, it becomes a priority to investigate rivalries rigorously to obtain insight about these dangerous and important series of events. Rivalries in the Middle East combine to shape the region and the world beyond its boundaries. A focus on the properties of two ongoing cases, Saudi Arabia with Iran, and Israel with Syria, will provide depth to complement the breadth of analysis that generally obtains in the study of rivalry.

This study unfolds in five additional sections. Section two reviews concept formation and evidence on rivalries in world politics within the context of the present study. Two basic approaches toward designation of rivalry, event-based and strategic, are introduced. Theorizing about interstate rival dyads, which includes a general hypothesis and an inductive element regarding expectations for the data analysis, occurs in the third section. The fourth section covers case selection, data and methods. Section five conveys time series analysis of two dyads: (a) Saudi Arabia and Iran; and (b) Israel and Syria. The sixth and final section sums up the contributions of this study and offers a few ideas about future research.

Rivalries in World Politics

Among social scientists, rivalries in world politics have been identified in two fundamentally different ways. One approach is event-based, with the other focusing more on how states perceive each other in strategic terms. Each approach is introduced in turn.

From the event-centered point of view, rivalry is “fundamentally about conflicting preferences or goals over some tangible or intangible good(s)” (Diehl and Goertz 2012: 84). Four dimensions combine to identify a rivalry.¹ The first, spatial consistency, focuses on the number and character of actors involved. The standard form for a rivalry to take is an interstate dyad. Duration is the second dimension. Rivalries can be categorized along this second dimension as either long- or short-term, allowing for some minimal period to ensure face validity. The third dimension of rivalry is behavioral; these interactions are a subset of what takes place between a pair of states in an overall sense and the key trait is militarization. Observed or latent threats with the potential to be militarized are essential to the concept formation. Standard operationalization of events in a rivalry is through Militarized Interstate Disputes (MIDs). Fourth, and finally, conflicts within a rivalry are linked to each other. Path dependence and expectations about the future converge to condition foreign policy decision-making, which reinforces the potential for future strife.

Working within the event-based approach, Diehl and Goertz (2012: 86) implement the Klein, Goertz and Diehl (2006) operational definition of a rivalry: “a sequence of at least three militarized interstate disputes (MIDs) between the same pair of states in temporal proximity to one another but occurring over an extended period of time (usually over ten years) so as not to be merely fleeting competitions”. As a result, Diehl and Goertz (2012: 86, 105-108) are able to

¹ The rest of this paragraph is based primarily on Diehl and Goertz (2012: 84-85).

identify 290 rivalries from 1816 to 2001. And how do these events arise? Valeriano (2012) offers a compelling treatment of origins. Key stimulants for rivalry include alliance formation, military buildups, territorial disagreements and major powers (Valeriano 2012: 80). The preceding factors, moreover, also are significant in sustaining rivalries.²

Rivalry can be conceptualized in ideational as well as material terms. “Strategic rivalries”, as defined by Thompson (2016a), “are interstate relationships in which the parties see their adversaries as competitive but also threatening enemies.” With an emphasis on perceptions rather than events, 128 rivalries are identified from 1816 onward (Thompson 2016b). Note that the ideational definition is significantly more restrictive; 128 rivalries are designated, in comparison to 290 from the event-based approach over approximately the same amount of time.

One aspect of prior work that is of particular interest here concerns the insight that interstate rivalry may be an effective *substitute* for war outside of the developed world (Thies 2004). For a developing state, Thies (2004) infers, engagement in one or more rivalries can have salutary effects on state extraction. A potentially threatening rival provides the rationale for extending the state apparatus, which includes a military infrastructure that can be used to deter the public from protest or even rebellion. In other words, personnel and weapons acquired ostensibly for external security can be used just as easily to achieve internal ends.³

Many studies have been devoted to interstate and intrastate conflicts in the Middle East and North Africa (MENA). Not much of this literature, however, assesses how these conflicts relate to each other in certain dyads over time. An exception is Azar (1990), who initiated a

² The factors enumerated in this context are well-established in the steps-to-war model from Senese and Vasquez (2008).

³ A few exceptions, such as weapons of mass destruction, do exist.

program of research on protracted social conflict that included an emphasis on the Middle East. A protracted social conflict reflects deep-seated, often identity-related disagreements that play out in a complex way and entail connections to domestic politics and sporadic outbursts of violence (Azar 1990). The concept will be of some value later on in theorizing about rivalries.

This chapter attempts to bring the literature on rivalries into the study of conflict in the MENA. Most interstate conflicts in the MENA fit within the framework of rivalry relatively well. These conflicts usually start with a clear shock that brings the rivalry to life and, consequently, a period of either heightened direct or proxy-based strife ensues between members of the dyad. The rivalries are continuous, long-term and generally terminated by another shock. Thus, once subjected to more thorough investigation, rivalries in the MENA are deemed likely to affirm the punctuated equilibrium model from Diehl and Goertz (2012). Studying strife in the MENA through the framework of rivalry should enhance understanding of how these repeated conflicts between members of certain dyads are played out over time. Greater knowledge of the dynamics of interstate rivalries also could inform efforts toward conflict management.

Theorizing

Visions of rivalry, strategic and event-based, focus respectively on ideational and material elements of dyadic interactions. For a setting in the developing world, a pair of factors reinforce an expectation about which conceptualization of interstate rivalry is more compelling. A general hypothesis is offered and then accounted for in terms of the two factors:

Developing World Hypothesis: In a developing world setting, properties of dyadic rivalry correspond more directly to a strategic rather than event-based conceptualization.

The first of the two factors underlying the hypothesis is protracted social conflict. These complex and difficult interactions, which include elements of identity and domestic instability, are not unknown in the developed world. Protracted social conflicts, however, are much more common in developing areas such as the MENA. When a rivalry includes this factor, it likely will be accounted for more effectively through a frame of reference based on perceptions rather than interstate events, such as MIDs, in and of themselves. The other factor is the greater likelihood, among developing states, of pursuing security via sustained conflict abroad. Rivalry under such circumstances might take a more expansive form, including proxy conflicts that do not necessarily entail a MID involving the principal antagonists. Interstate conflicts may even be contrived to justify maintenance of a garrison state (Lasswell 1941; Friedberg 2000).

This investigation also includes an inductive component that is intertwined with the choice of time series analysis as a method. A series of data points regarding behavior in a rivalry can be regarded as a stochastic process. Thus statistical estimation, to be conducted in a later section, is expected to reveal various dynamics within the series. Discovery of properties such as autoregression of one order or another can produce new ideas about the nature of the rivalry – an inductive process. On the basis of intuition, it is expected that some degree of serial dependence should exist in events collectively designated as forming a *rivalry*. Interdependence between and among observations over time is unknown, as yet, in terms of specific statistical form, but nevertheless anticipated to appear in some way.

Data and Methods

Iran and Saudi Arabia, along with Syria and Israel, provide an effective starting point for in-depth probing of rivalries in the Middle East via time series analysis. Each of these dyads features sustained conflict that is deemed significant from a policy standpoint. There is some variation between these dyads as well. One pair falls within the greater Arab/Israel conflict while the other does not. In addition, Israel and Syria have gone to war with each other directly, whereas that is not the case for Saudi Arabia and Iran. Thus the data analysis will include dyads with a mixture of parallel and different properties that exist *a priori*. It also should be noted that, with two cases of rivalry, the analysis that follows constitutes a plausibility probe more than a full-fledged effort toward testing hypotheses.

Both the event-based and strategic approaches identify rivalries involving the dyads selected for data analysis. For Diehl and Goertz (2012: 107, 108), with an event-based approach to identifying rivalries, the time spans are as follows: (a) Iran and Saudi Arabia, 1984-1988; and (b) Israel and Syria, 1961-2001. The dates from Thompson (2016a), with a strategic approach toward designating rivalries, are (a) Iran and Saudi Arabia, 1979-ongoing; and (b) Israel and Syria, 1948-ongoing. Obviously, the strategic approach, at least in these instances, tends toward a longer duration in designating rivalries.

Most common among measurements of rivalry is summing up direct military confrontations between dyad members. Operationalization of rivalry in that way, however, is not as likely to work as well in the MENA region. Many of the rivalries in the region manifest themselves in the form of opposing positions on any number of global and regional issues. Thus, a comprehensive measurement that can capture this latent form of rivalry becomes desirable.

Ideal point estimates of states' preferences, based on their United Nations General Assembly (UNGA) votes, are used to assess dyadic relationships. Bailey, Strezhnev and Voeten (2015) construct a single dimension, spatial model that estimates a state's position toward the US-led liberal order.⁴ For several reasons, this is superior to previous estimates (S-score, for example) that attempt to capture preferences for states using UNGA votes. First, spatial models estimate vote cut points in a way that differentiates between (a) similarity due to changes in agenda versus (b) just counting similarity in voting *per se*. This approach provides a better estimate of states' preference changes. Second, this type of estimate allows the researcher to weight votes by how much they reflect the main preference dimension of the state. Thus, "if a series of votes appear that have little to do with the main dimension of preferences, they will not exert much influence on ideal point estimates," in contrast to other estimates that give all votes the same weight (Bailey, Strezhnev and Voeten 2015). Third, the estimate from the spatial model is better able to distinguish signal from noise in terms of capturing real shifts in states' preferences. In sum, preferences for states in relation to each other regarding policy as assessed more comprehensively by the data from Bailey, Strezhnev and Voeten (2015) in comparison to other available sources.

Data from Strezhnev and Voeten (2013) include 4,335 roll call vote⁵ over 67 sessions of the UNGA. Bailey, Strezhnev and Voeten (2015) use this data to construct a spatial theory item response model that estimates foreign policy preferences based on the UNGA data mentioned

⁴ We would like to thank Evgeniia Iakhnis for suggesting use of this estimate.

⁵ If a vote is needed for a resolution at the UNGA, it can be taken by summary of the votes, by counting the votes for, against, or abstaining, which does not identify the position of the member states. If any of the members requests a roll call, it means that each member state's vote would be recorded. Around a quarter of all UNGA votes are adopted without a member state requesting a roll call.

earlier. Their estimate (coded “asabsidealdiff”) is the absolute ideal point difference between members of a given dyad.

Time series analysis is applied to the two dyads from the Middle East in a search for pattern and meaning in ideal point differences. Before any explicit modelling of the two time series is conducted, we first test both series for unit roots. As noted in Enders (2010), time series that contain unit roots (i.e. non-stationary time series) will not be convergent. As such, series that contain unit roots are known as “random walk” models because the change in series is completely random and not predictable. In the present context, if the dyads are “random walks”, it would suggest that there is no predictability in the voting preferences between Iran and Saudi Arabia and Israel and Syria as quantified by Strezhnev and Voeten (2013). Panels A & B of Figure 1 display the two time series. Panel A of Figure 1 displays the Bailey, Strezhnev and Voeten (2015) ideal point measure for Israel and Syria on the y-axis with the year on the x-axis; Panel B displays the Bailey, Strezhnev and Voeten (2015) ideal point measure of Iran and Saudi Arabia on the y-axis and the year on the x-axis.

(Figure 1 about here)

Note that in both Panels A & B of Figure 1, there is an upward trend in the Israel-Syria time series and a slight upward trend in the Iran-Saudi Arabia series. As such, for robustness, we implement Augmented Dickey Fuller (ADF) unit root tests that allow the two series to be trend stationary (i.e. the time series are stationary and fluctuate around a trend) as well as stationary around a constant.

(Table 1 about here)

Table 1 displays the results from the ADF unit root tests. First, it is important to note that if the ADF statistics are not statistically significant, one is not able to reject the null hypothesis that the series contain a unit root (i.e. the series are not stationary). As can be seen in Table 1, the

Israel-Syria dyad contains a unit root suggests that the changes in the series over time are completely random (i.e. random walk). The ADF statistics for the the Iran-Saudi series is mixed. While the ADF test allowing for a trend suggest the series is a random walk, the ADF test without a trend suggests that the series is stationary. Given the results of ADF tests, we opt to first difference the Israel-Syria dyad and estimate the Iran-Saudi dyad in levels.

Time Series Analysis of the Dyads⁶

Iran-Saudi Arabia

Again, as noted above, Panel B of Figure 1 conveys the time series for Iran and Saudi Arabia. The degree of correspondence in UNGA voting is tracked from 1979 to 2014, the range for which data are available regarding this dyad. Clear from visual inspection is a series with peaks and valleys, along with a general movement toward greater difference in voting preferences over time.

Prior to the Iranian Revolution, the Iranian-Saudi relationship went from non-existent until the beginning of the 1960s to cooperative later in that decade after British withdrawal from the Persian Gulf. Britain departed in order to facilitate development of a new political order in the Gulf that would satisfy both countries.⁷ The relationship began to sour as Iran expanded its

⁶ With regard to the study of political processes, Helgason (2016: 68), draws attention to the possibility of complex dynamics that can appear even in a relatively short time series. Thus it is appropriate for scholars to “proceed carefully when they have short time series and provide estimated effects based on different assumptions about the underlying data-generating process” (Helgason 2016: 68).

⁷ The definitive study of Britain’s withdrawal from east of Suez appears in Pickering (1998).

military in the 1970s after a significant increase in oil prices, notably during 1973, enabled it to do so. Things got worse with Saudi Arabia when Iran seized three islands (Abu Musa and the Greater and Lesser Tunbs) in 1971 claimed later by the newly founded state of the United Arab Emirates. With that said, the relationship began to stabilize by the end of the 1970s. Noted by Thompson (2016a: Table 2) in his exposition on rivalries, the Iranian Revolution provided the shock that initiated the rivalry with Saudi Arabia. The Islamic Republic of Iran emerged as the prominent Shia power in the MENA region. After the weakening of Egypt, Saudi Arabia emerged as the protector of Sunnis in some sense. Although the two countries never fought each other directly in a war, Iran and Saudi Arabia supported opposing sides in many neighboring countries and continue to do so today.

Rivalry initially manifested itself in the Iran-Iraq War, where Saudi Arabia supported Saddam's Iraq against Iran throughout the 1980s. The war resulted in a huge loss to Iran both in terms of human and economic capital. Iraq suffered as well and no clear winner emerged at the end. Other proxy battles took place in Lebanon, Syria, Yemen, Bahrain and Iraq (after the US invasion). Iran and Saudi Arabia fought each other by supporting opposing clients (in some cases militant groups and in others cases state governments). Although the rivalry includes 'ups and downs', it is continuous. Saudi-Iranian rivalry keeps igniting conflicts between the two states, reaffirming the interdependent nature of events in this dyad over time.

Rasler (2016) puts forward a convincing argument that reaffirms the preceding story of how the Saudi-Iranian rivalry started and why. Rasler argues that external shocks – specifically, the Iranian Revolution – gave birth to the rivalry. Since revolutionary leaders usually are more risk tolerant and ambitious than non-revolutionary ones, they tend toward efforts to spread their revolution outside of their borders and disrupt the regional status quo. In this case, Ayatollah

Khomeini did exactly those things. Khomeini believed his revolution to be universal and that Muslims, especially around the Muslim world, would follow his lead and topple their governments – the so-called the “‘Great Satan’ puppets”. Countries neighboring new revolutionary states, however, usually perceive such entities as a threat that needs to be contained. The archetypal case, perhaps, is France from the revolutionary and Napoleonic years, which found itself almost constantly at war with the monarchies of Europe.

Hostile beliefs about a revolutionary state often give birth to rivalry. In this case, Saudi Arabia believed that revolutionary Iran would be a threat to its stability, especially given that its oil-rich provinces in the East are majority Shia. In the Saudi regime’s eyes, this religious affinity made the provinces more susceptible to influence from Khomeini. Thus, by positioning itself as the preeminent Sunni power and protector, Saudi Arabia used the sectarian card against the newly established Shia state.

As noted above, our goal is to use time series models to capture the effect of geopolitical events that may influence the voting preferences of Saudi Arabia and Iran. As such, we use a ARIMA modelling of time series data augmented with geopolitical shocks as independent variables. This approach enables us to quantify the effect of the shocks on voting preferences. In order to do so, we selected the following five major geopolitical events: the Iranian revolution in 1979, the Iran-Iraq war from 1980 – 1988, the first Gulf War, the U.S. invasion of Iraq in 2003, and the Syrian revolution in 2011.

Iran’s revolution laid the groundwork for the rivalry to start. Iran under the Shah, with the backing of the US, had been too powerful to be challenged by Saudi Arabia and, overall, their foreign policies did not clash as much until after the revolution. The revolution made Iran an active supporter of Shia groups in the region, which troubled Saudi Arabia. For the Iran-Iraq war and

the Syrian Revolution, Iran and Saudi Arabia found themselves against each other even if not directly. In the former conflict, Saddam's Iraq defended the Sunnis and Saudi Arabia thought supporting Saddam to weaken Iran was a good strategy to expand its power in the region. As for the latter strife, Iran supported the Assad regime directly against Saudi Arabia's interests in the country (i.e., supporting the Sunni forces against Assad). The Gulf Wars, by contrast had been initiated by neither Iran nor Saudi Arabia. These exogenous crises left an influence vacuum to be filled by the neighbors of Iraq. The first Gulf War weakened Saddam, leaving a room for Iran to support his enemies. The second Gulf War left the door open for both Iran and Saudi Arabia to meddle in Iraq's affairs and to fight for influence indirectly.

Formally, we estimate the following model for the Saudi-Iran rivalry:

$$y_t = a_0 + A(L)y_{t-1} + c_1 rev_t + c_2 iiwar_t + c_3 gw1_t + c_4 gw2_t + c_4 syrian_t + B(L)\varepsilon_t \quad (1)$$

where y_t is Iran-Saudi dyad, the $A(L)$ and $B(L)$ are the lag operators and capture the traditional ARIMA model, rev is the Iranian revolution, $iiwar$ is the Iran-Iraq war, $gw1$ is the first Gulf War, $gw2$ is the invasion of Iraq in 2003, and $syrian$ captures the Syrian revolution. The geopolitical events were defined as follows:

$$\begin{aligned} rev_t &= 1 \text{ for } t = 1979 \text{ and } rev_t = 0 \text{ for } t \neq 1979; \\ iiwar_t &= 1 \text{ for } 1980 < t < 1988 \text{ and } iiwar_t = 0 \text{ otherwise;} \\ gw1_t &= 1 \text{ for } t = 1991 \text{ and } gw1_t = 0 \text{ for } t \neq 1991; \\ gw2_t &= 1 \text{ for } t = 2003 \text{ and } gw2_t = 0 \text{ for } t \neq 2003; \\ syrian_t &= 1 \text{ for } t = 2011 \text{ and } syrian_t = 0 \text{ for } t \neq 2011. \end{aligned}$$

Before estimating equation (1), we first estimate a reasonable ARMA model. Given the limited number of observations, we selected the ARMA model with the minimum number of lags required to rid the residuals

of serial correlation. As such, we selected an AR(1) model. We subsequently estimated the following equation:

$$y_t = a_0 + a_1 y_{t-1} + c_2 iiwar_t + c_3 gw1_t + c_4 gw2_t + c_4 syrian_t + \varepsilon_t \quad (2)$$

The rev_t was not included because the analysis begins in 1980 given the lagged coefficient on y_{t-1} .

Table 2 displays the results from estimate (2). Interestingly, only the two Gulf Wars have statistically significant effects on the Iran-Saudi series. The immediate impact effect on the voting preferences of the first Gulf War was -0.28 whereas the long-run effect was $-0.80 \left(\frac{-0.28}{(1-0.65)} \right)$. The second Gulf War had an even larger immediate impact and long run effects. Note that the immediate impact of the second Gulf War was larger in magnitude -0.33, and the long-run effect was $-0.94 \left(\frac{-0.94}{(1-0.65)} \right)$.

(Table 2 about here)

Both Gulf Wars brought significant change to the Middle East. The first war-created shock brought the US into the region more directly and enabled it to maintain bases there to this day. Examples include al Udeid Air Base in Qatar (i.e., home of the US Air Force's command center for all air operations in the Middle East and Afghanistan), Ali al Salem Air Base in Kuwait and al Dhafra Air Base in the United Arab Emirates. The second shock from war allowed the US to take control of Iraq, one of the major Arab countries and thereby to influence to region's politics with greater proximity than in the past. Since the US is the common denominator in both conflicts, it is clear that having Saudi Arabia's closest ally in the region next to Iran had a strong influence on their relationship, particularly after the second Gulf War.

Israel-Syria

Panel A of Figure 1 conveys the time series for Israel and Syria. The degree of correspondence in UN voting is tracked from 1948 to 2011. Less visible, in comparison to the preceding series, are peaks and valleys. There is once again a general movement toward greater difference over time, with a steeper slope and higher absolute level of disagreement reached as the series progresses.

Thompson (2016a: see Table 2) includes Israel-Syria from 1948 to the present in the list of rivalries. The rivalry so far has resulted in at least three wars between the two countries and other conflicts via proxies until today. Founding of the state of Israel – a shock to the region as a whole – initiated the rivalry (Thompson 2016a: Table 3). The first confrontation was the 1948 Arab–Israeli War. A coalition of Arab countries, including Syria, launched a war against the newly founded state of Israel. This attack ultimately resulted in the defeat of the coalition. The defeat of the Arab states destabilized many of these regimes and initiated a new period of military coups and military governments that ruled the region for a long period.

Syria went through a long phase of political instability from 1948 to the 1960s due to the struggle for power among political and military elites that led to unification with Nasser’s Egypt from 1958 to 1961. The inability to distinguish Egypt’s foreign policy from that of Syria during this period, along with the latter’s initial political instability, causes us to designate the rivalry as starting in 1961. Syria’s relationship with Israel continued to be characterized by hostility and occasional violence in the border areas. Israel launched a preemptive attack against its Arab neighbors in the 1967 that resulted in Syria losing of the Golan Heights. This territorial shift, in turn, reinforced the sense of rivalry and animosity between the two states. Moreover, the civil war in Lebanon and Israeli invasion of it to support the Maronites opened another battle where Syria

fought against Israel via proxies. Syria continued to do so after its withdrawal from Lebanon in 2005 by supporting Hezbollah, Israel's arch nemesis in Lebanon. This rivalry manifested itself in different forms – sometimes in direct wars between the two countries and at other times via proxy wars. All of these conflicts, however, are related to each other and pave the road for further strife between the two states.

Similar to the analysis above, we again to use time series models to capture the effect of geopolitical events that may influence the voting preferences of Israel and Syria. We once more use an ARIMA modelling of time series model augmented with geopolitical shocks to quantify the effect of such disturbances on voting preferences. The following four geopolitical events were selected: the 1967 Six Day War, the 1973 Yom Kippur War, the Lebanese Civil War in 1982, and the invasion of Lebanon by Israel in 2006. The first three wars simply brought both countries into direct conflict, with the last one fought between Hezbollah, supported by Syria, and Israel.

Formally, we estimate the following model for the Syria-Israel:

$$\Delta y_t = a_0 + A(L)\Delta y_{t-1} + c_1 \text{sixday}_t + c_2 \text{YomKip}_t + c_3 \text{LebCivil}_t + c_4 \text{inv}_t + B(L)\varepsilon_t \quad (3)$$

where y_t is the Israel Syria dyad, the $A(L)$ and $B(L)$ are lag operators, *sixday* is the 1967 war, *Yomkip* is the 1973 Yom Kippur War, *LebCivil* is the Lebanese Civil War in 1982, and *inv* is the invasion of Lebanon by Israel in 2006. Similar to the analysis above, the geopolitical events were defined as follows:

$$\begin{aligned} \text{sixday}_t &= 1 \text{ for } t = 1967 \text{ and } \text{sixday}_t = 0 \text{ for } t \neq 1967; \\ \text{Yomkip}_t &= 1 \text{ for } t = 1973 \text{ and } \text{Yomkip}_t = 0 \text{ for } t \neq 1973; \\ \text{LebCivil}_t &= 1 \text{ for } t = 1982 \text{ and } \text{LebCivil}_t = 0 \text{ for } t \neq 1982; \\ \text{inv}_t &= 1 \text{ for } t = 2006 \text{ and } \text{inv}_t = 0 \text{ for } t \neq 2006; \end{aligned}$$

Before estimating (3), we again estimate a reasonably parsimonious ARMA model. Given the limited number of observations, we selected the ARMA model with the minimum number of lags required to rid

the residuals of serial correlation. As such, ARMA(0,0) model was selected. We subsequently estimated the following equation:

$$\Delta y_t = a_0 + c_1 \text{sixday}_t + c_2 \text{YomKipp}_t + c_3 \text{LebCivil}_t + c_4 \text{inv}_t + \varepsilon_t \quad (4)$$

Table 3 displays the results from estimate (3). As expected, all three of the wars/invasions have statistically significant effects on the changes in the Israel-Syria dyads. Note that the immediate impact of the Six Day War was 0.14, the immediate impact of the Yom Kippur War is 0.27, and the immediate impact from the invasion of Lebanon was 0.17.

(Table 3 about here)

What can be said of the two rivalries in a comparative sense? Three common traits emerge from the data analysis, which identifies each series as similar in terms of basic time series properties (i.e. upward trends, persistent time series) and autoregressive nature.

First, evidence from each dyad confirms the Developing World Hypothesis. Both of the rivalries examined in this paper tend to have a very clear start and are continuous from their point of initiation to this present day. Moreover these rivalries tend not to be influenced significantly by only the most intense events along the timelines we specified. This property suggests that these rivalries reflect asymmetry in regional *strategic goals* of both countries in each dyad and not particular events. In addition, consider the duration of each rivalry. Each is more in line with the longer time frame from a strategic as opposed to event-based designation. To some degree, this is connected to the complicating role of protracted social conflict. All of this is consistent with the Developing World Hypothesis.

Second, each dyad confirms the expectation that a rivalry will come to life with a shock. Clear external shocks initiated both the Iran-Saudi and Israel-Syria rivalries. In the former, the Iranian revolution with its huge potential to rise up Muslims (or at least Shias) against their governments brought this rivalry to life. For the latter, establishment of the Jewish state in the heart

of the Middle East and displacement of the Palestinians brought Syria and Israel in an immediate clash against each other. The conflict continues to this day. Shocks are essential for rivalries to start and lock into sustained strife. The rivalries examined in this chapter support these assertions.

Third, intuition about rivalry as containing stochastic elements is supported. Time series modeling confirms the existence of an autoregressive process in the Saudi-Iranian and Israeli-Syrian rivalries. Moreover, unit root tests suggested that each is highly persistent and the Israel-Syria dyad a random walk process. External events (such as wars) do have statistically significant effects on both dyads; however, the magnitudes and signs of conflicts do differ across each dyad. This is the inductive element from theorizing at work.

Summing Up

This chapter analyzes dyads in the Middle East through the framework of rivalry. The concept of rivalry adds considerably to understanding of the nature of conflicts in the region and how they develop. Through rivalry as a frame of reference, it becomes easier to understand how each event in the dyads, Saudi-Iranian and Israeli-Syrian, is linked to others and influences the future. Use of ARIMA modeling to assess the effect of past events on those of the present and future adds rigor to the study of conflict in the Middle East. The dyads selected for an initial assessment, Syria and Israel, along with Saudi Arabia and Iran, confirm intuition about temporal properties within rivalries. Each time series exhibits an autoregressive component. In addition, it is interesting to observe the trend toward diverging preferences in each rivalry.

One point to bear in mind for future research is the strong confirmation in both time series models about the role of highly intense, war-related shocks. Finally, it almost goes without saying

that additional rivalries in the Middle East should be investigated to see whether patterns from this study hold true or new features emerge.

Figure 1

Time Series for Iran and Saudi Arabia

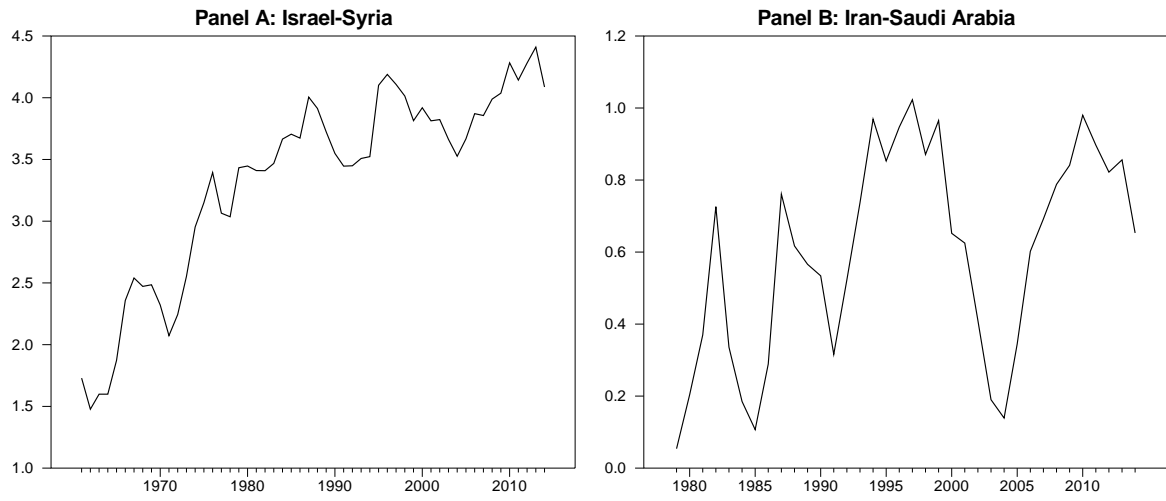


Table 1: ADF Tests Results

<i>Variable</i>	<i>ADF Test w/Trend</i>	<i>ADF Test w/o Trend</i>
Israel-Syria	-2.00	-1.85
Iran-Saudi Arabia	-2.99	-3.02*

Notes: The critical values may be obtained upon request of the author. As noted in Enders (2010) because of the null hypothesis of ADF tests, the critical values are not standard T-statistic critical values. *, **, *** signify statistical significance at the 99%, 95%, and 90% levels.

Table 2: Iran-Saudi Regression Results:

$$y_t = a_0 + a_1 y_{t-1} + c_2 iiwar_t + c_3 gw1_t + c_4 gw2_t + c_4 syrian_t + \varepsilon_t$$

<i>Variable</i>	<i>Coefficient</i>	<i>P-value</i>
a_0	0.25	0.00
y_{t-1}	0.657***	0.00
$iiwar_t$	-0.06	0.58
$gw1_t$	-0.28***	0.00
$gw2_t$	-0.33***	0.00
$syrian_t$	0.002	0.96

Note: *, **, *** signify statistical significance at the 99%, 95%, and 90% levels. All coefficients were estimated robust standard errors. The Durbin-Watson Statistic was 1.84, the Ljung Box Qstatistics (4)(8) significance levels were 0.75, and 0.06 respectively which indicates that there was no or very little serial correlation left in the residuals.

Table 3: Iran-Saudi Regression Results:

$$\Delta y_t = a_0 + c_1 sixday_t + c_2 YomKip_t + c_3 LebCivil_t + c_4 inv_t + \varepsilon_t$$

<i>Variable</i>	<i>Coefficient</i>	<i>P-value</i>
a_0	0.03	0.23
$sixday_t$	0.14***	0.00
$Yomkip_t$	0.27***	0.00
$LebCivil_t$	-0.03	0.21
inv_t	0.17***	0.00

Note: *, **, *** signify statistical significance at the 99%, 95%, and 90% levels. All coefficients were estimated robust standard errors. The Durbin-Watson Statistic was 1.75, the Ljung Box Qstatistics (4)(8) significance levels were 0.18 and 0.10 respectively which indicates that there was no serial correlation left in the residuals.

References

- Azar, Edward. 1990. *The Management of Protracted Social Conflict: Theory and Cases*, Aldershot: Dartmouth
- Bailey, Michael A., Anton Strezhnev and Erik Voeten. 2015. "Estimating Dynamic State Preferences from United Nations Voting Data." *Journal of Conflict Resolution* n. pag. Web.
- Box, George E.P. and Gwilym M. Jenkins. 1976. *Time Series Analysis: Forecasting and Control*. San Francisco: Holden-Day.
- Brockwell, Peter J. and Davis, Richard A. 1996. *Introduction to Time Series and Forecasting*. New York: Springer-Verlag.
- Chatfield, Chris. 2003. *The Analysis of Time Series: An Introduction*. 7th ed. London: Chapman and Hall.
- Colaresi, Michael P., Karen D. Rasler and William R. Thompson. 2008. *Strategic Rivalries in World Politics: Position, Space, and Conflict Escalation*. Cambridge: Cambridge University Press.
- Diehl, Paul F., and Gary Goertz. 2012. "The Rivalry Process: How Rivalries are Sustained and Terminated." In John A. Vasquez, ed. *What Do We Know about War?* 2nd ed. Lanham, MD: Rowman & Littlefield, pp. 83-109.
- Friedberg, Aaron L. 2000. *In the Shadow of the Garrison State: America's Anti-Statism and Its Cold War Grand Strategy*. Princeton, NJ: Princeton University Press.
- Granger, Clive W. J. and Paul Newbold. 1986. *Forecasting Economic Time Series*. Orlando, FL: Academic Press.
- Helgason, Agnar Freyr. 2016. "Fractional Integration Methods and Short Time Series: Evidence from a Simulation Study." *Political Analysis* 24: 59-68.

Klein, James P., Gary Goertz and Paul Diehl. 2006. "The New Rivalry Data Set: Procedures and Patterns." *Journal of Peace Research* 43: 331-348.

Lasswell, Harold D. 1941. "The Garrison State." *American Journal of Sociology* 46: 455-468.

McCleary, Richard, and Richard A. Hay, Jr. (1980). *Applied Time Series Analysis for the Social Sciences*. Beverly Hills, Ca: Sage.

Pickering, Jeffrey. 1998. *Britain's Withdrawal from East of Suez*. New York, NY: Palgrave Macmillan.

Rasler, Karen. 2016. "Revolution and Rivalry Onset: The Emergence of the Egyptian-Saudi (1955-1970) and Iranian-Saudi (1979-2016) Rivalries." Unpublished manuscript.

Senese, Paul D., and John A. Vasquez. 2008. *The Steps to War: An Empirical Study*. Princeton, NJ: Princeton University Press.

Strezhnev, Anton, and Erik Voeten. 2013. "United Nations General Assembly Voting Data." Accessed July 13, 2015. <http://hdl.handle.net/1902.1/12379>.

Thies, Cameron G. 2004. "State Building, Interstate and Intrastate Rivalry: A Study of Post-Colonial Developing Country Extractive Efforts, 1975-2000." *International Studies Quarterly* 48: 53-72.

Thompson, William R. 2016a. "Humpty Dumpty Had a Great Fall? Making Sense of Longer-term Ups and Downs in Middle Eastern Rivalries." Unpublished manuscript.

Thompson, William R. 2016b. "Trends in the Analysis of Interstate Rivalries." Unpublished manuscript.

Valeriano, Brandon. 2012. "Becoming Rivals: The Process of Rivalry Development." In John A. Vasquez, ed. *What Do We Know about War?* 2nd ed. Lanham, MD: Rowman & Littlefield, pp. 63-82.