



KADIR HAS UNIVERSITY
SCHOOL OF GRADUATE STUDIES
PROGRAM OF INTERNATIONAL RELATIONS

**REVISITING BREMER: AN EMPIRICAL AND
METHODOLOGICAL REASSESSMENT ON
INTERSTATE WAR ONSET**

EMRE KAYA

MASTER'S THESIS

ISTANBUL, JULY, 2023

Emre Kaya

Master' s Thesis

2023

REVISITING BREMER: AN EMPIRICAL AND METHODOLOGICAL REASSESSMENT

EMRE KAYA

DANIŞMAN: DOÇ. DR. AHMET SALİH BIÇAKÇI

YÜKSEK LİSANS TEZİ

Submitted to the School of Graduate Studies of Kadir Has University in partial
fulfillment of the requirements for Master of Arts degree in International Relations

İstanbul, Temmuz, 2023

APPROVAL

This thesis, titled REVISITING BREMER: AN EMPIRICAL AND METHODOLOGICAL REASSESSMENT , submitted by Emre Kaya in partial fulfillment of the requirements for the degree of Master of Arts in International Relations, is approved by

Assoc. Prof., Ahmet Salih Bıçakçı (Supervisor)

.....

Kadir Has University

Asst. Prof., H. Emrah Karaoğuz

.....

Kadir Has University

Prof. Dr., Emre Erdogan

.....

Bilgi University

I certify that the above signatures belong to the faculty members named above.

Prof. Dr. Mehmet Timur Aydemir

Director of the School of Graduate Studies

Approval Date: 07.07.2023

DECLARATION ON RESEARCH ETHICS AND PUBLISHING METHODS

I, EMRE KAYA; hereby declare that,

- this Master of Arts Thesis that I have submitted is entirely my own work and I have cited and referenced all material and results that are not my own in accordance with the rules
- this Master of Arts Thesis does not contain any material from any research submitted or accepted to obtain a degree or diploma at another educational institution;
- I commit and undertake the “Kadir Has University Academic Codes of Conduct” prepared in accordance with the “Higher Education Council Codes of Conduct”

In addition, I acknowledge that any claim of irregularity that may arise in relation to this work will result in a disciplinary action in accordance with the university legislation

Emre Kaya

Date and Signature (07.07.2023)



To my family ...

ACKNOWLEDGMENT

This thesis is the reward of my efforts since my graduation from college. In my senior year, having a master's degree in international relations became crystalized as what I wanted to do for sure. For multiple unfortunate reasons, however, it took a while until I enrolled in a master's program and achieved it. The time in between was the most dedicated period of my life. I am very happy that I made it.

I would like to thank my supervisor Assoc. Prof. Ahmet Salih Bıçakçı for his advisory during this writing process. Also, I would like to thank my committee members Asst. Prof. Hüseyin Emrah Karaoğuz and Professor Emre Erdoğan for their very useful comments.

Heartful thanks go to my friends who have been around to listen to my excitement, enthusiasm about what I have been doing.

My greatest gratitude goes to my family. They supported me financially and emotionally throughout this process. I will always be indebted to them.

REVISITING BREMER: AN EMPIRICAL AND METHODOLOGICAL REASSESSMENT

ABSTRACT

The destructiveness of interstate war has led to numerous intellectual efforts to identify the determinants of this phenomenon. Stuart A. Bremer's work, which entered the international relations literature in 1992, has been a milestone towards this goal. However, Bremer's study needs to be reassessed due to its limited time span (1816-1965) and different methodological perspectives. Thus, this thesis analyzes the period between 1816 and 2007, elaborates on the underlying dynamics behind the new results, and discusses Bremer's methodological limitations. The results demonstrate that proximity and relative power retain their war-promoting influence while membership in a common alliance and joint development maintain their peaceful effect. Meanwhile, power status, in addition to the absence of democracy and military preparedness, appears statistically insignificant. However, Bremer's choices of unit of observation, statistical model, explanatory variables, and partly his 'paradigm', have important limitations.

Keywords: Interstate wars, dyads.

BREMER’I ZİYARET: BİR AMPİRİK VE METODOLOJİK YENİDEN DEĞERLENDİRME

ÖZET

Devletlerarası savaşın yıkıcılığı, bu olgunun belirleyicilerini tespit etmek için çok sayıda entelektüel çabayı beraberinde getirmiştir. Stuart A. Bremer’in uluslararası ilişkiler literatürüne 1992 yılında kazandırdığı çalışması, bu hedef doğrultusunda bir kilometre taşı niteliğindedir. Ancak bu çalışma, gerek kısıtlı bir zaman dilimini kapsadığı için (1816-1965) gerekse farklı yöntemsel bakış açılarının varlığı sebebiyle yeniden bir inceleyemeye tabi tutulmalıdır. Bu sebeple bu tez, 1816-2007 arasını ele almak suretiyle bir yeniden analiz uygulamış, yeni sonuçlara dair bir temellendirme yapmış ve Bremer’in çalışmasının yöntemsel kısıtlarını tartışmıştır. Sonuçlara göre mesafe ve göreceli güç çatışmacı; ortak bir ittifak mensubiyeti ve her iki ülkenin gelişmişliği ise barışçıl etkilerini koruyan faktörler olurken, demokrasinin yokluğu ve askeri hazırlık seviyesine ek olarak güç statüsü de istatistiksel olarak anlamsız bir diğer faktör olarak bulgulanmıştır. Ancak Bremer’in tercih ettiği gözlem birimi, istatistiksel model, açıklayıcı değişkenler ve kısmen de olsa ‘paradigması’, önemli kısıtlar barındırmaktadır.

Anahtar Sözcükler: devletler arası savaş, devlet çiftleri

TABLE OF CONTENTS

ACKNOWLEDGMENT	v
ABSTRACT	vi
ÖZET.....	vii
LIST OF FIGURES	x
LIST OF TABLES	xi
LIST OF ABBREVIATIONS	xii
1. INTRODUCTION.....	1
1.1 Background.....	1
1.2 The Importance of Bremer's Study.....	2
1.3 Research Question and The Structure of the Thesis	3
2. RATIONALE FOR EXPLANATORY VARIABLES.....	4
2.1 Proximity and Interstate War Onset.....	4
2.2 Power Difference and Interstate War Onset	6
2.3 Power Status and Interstate War Onset	8
2.4 Alliances and Interstate War Onset	10
2.5 Democracy and Interstate War Onset	11
2.6 Relative Development and Interstate War Onset	12
2.7 Militarization and Interstate War Onset	14
2.8 Chapter Conclusion	15
3. METHODOLOGY.....	16
3.1 Data	17
3.1.1 Dependent Variable	18
3.1.2 Independent Variables.....	18
3.2 The Model	21
4. RESULTS AND DISCUSSION	22

4.1 Results for 1816-1965.....	23
4.2 Results for 1816-2007 & Discussion.....	23
5.REASSESSING BREMER’S CHOICES.....	30
5.1 Choice of Unit of Analysis	30
5.2 Choice of Data	33
5.3 Choice of Model.....	36
5.4 ‘Choice’ of Paradigm	37
6. CONCLUSION.....	39
7. REFERENCES.....	41
APPENDIX A	48

LIST OF FIGURES

Figure 3.1: Dyad-Type Distribution per Experienced Number of Wars	20
Figure 4.1: Observed Number of Wars vs. Predicted Number of Wars	28



LIST OF TABLES

Table 4.1 Regression Results.....	22
-----------------------------------	----



LIST OF ABBREVIATIONS

e.g.	<i>exempli gratia</i>
exp	exponential
etc.	<i>et cetera</i>
i.e.	<i>id est</i>
R	R Software
NATO	North Atlantic Treaty Organization
U.S.	United States
USSR	Union of Soviet Socialist Republics
v	version
WTO	World Trade Organization

1. INTRODUCTION

1.1 Background

War has been salient throughout history. With the emergence of state as an actor in the international arena, this phenomenon started to coexist with the latter and gradually became an act that has been exercised also between these actors. Since wars became integral to interstate relations, why and under which conditions states were more likely to fight with each other became a central question.

Before scientific purposes, this question was legitimate because of the costs it brought about. Over time, wars between states have been very costly and given the developed military capabilities by the states, this “cost-potential” was even underrealized. While 4 and 5 million people lost their lives in the Thirty Years War and Napoleonic Wars, respectively, death figures reached 26 million for the First World War and 53.5 million for the Second World War (Cashman and Robinson 2007). Even in the post-1945 period, there have been decades in which more than a million people have been killed due to interstate wars (Sarkees, Singer and Wayman 2003).

However, as the history unfolded, numerous answers were suggested by statesmen and scholars and it became apparent that answering this question is not an easy task. Above all, ‘wars’ and ‘states’ are not uniform: For example, as it was the case in the 19th century, some were empires, while some were relatively much less powerful. Following the waves of democratization in different time periods (Huntington 1991), this difference was observable also across regime types: While some wars involved democratic states, those that broke out between anocracies or autocracies also existed.

In addition, states’ motivation to engage in a war also varied. States fought some wars primarily to control routes or territories that carried particular economic importance for

them. The factor that paved the way for Britain's attack on China in 1839, known as the First Opium War, was the former demanding the opening of new ports for international trade and renegotiation of tariffs. (Axelrod and Phillips 2005). As economic interdependence increased in global politics, states' intention to settle economic issues through wars decreased compared to previous times.

Also, the geography and spatiality of interstate war also changed. While the hub of warfare was once Europe and the Western Hemisphere, as of the end of World War II, one can talk about a shift towards the so-called 'developing world' (Hensel 2002). Drones added another dimension to the spaces of warfare and carries the potential the blur the distinction between civilian and military 'zones' (Adamson 2018). All of these differences rendered the goal of analyzing the onset of interstate wars even more challenging.

A distinct challenge that accompanies these aspects is the uncertainty on the level at which the onset of interstate wars should be analyzed. Whether the occurrence of wars is dependent either on individual decision-making, the interaction between states, structure of the international system defined as anarchy (Cashman 2004) or their combination is a decision to-be-given which analysts cannot dispense with. International system, where changes in the distribution or concentration of power among major powers are observed, was widely acclaimed as the appropriate level to analyze the outbreak of wars (Bueno de Mesquita 1975). Since abandoning the idea of only general wars "make a real difference" (Shampel 1993), preferring the ease of tracing international relations through bilateral relations (Croco and Teo 2005), scholars adopt dyads as the analytical cornerstone for war onset (Braumoeller 2021).

1.2 The Importance of Bremer's Study

By having resorted to the dyadic level of analysis, in his article 'Dangerous Dyads: Conditions Affecting the Likelihood of Interstate War, 1816-1965' published in 1992, Stuart A. Bremer claimed that he identified the situations in which states are more likely to fight each other. This was a provocative study because of its findings as well its method: Before all, it claimed to have shed light on the drivers of one of the most complex

phenomena of interstate relations. Also, he suggested an innovative approach that was never employed before.

To elaborate, Bremer's (1992) study was pushing the subfield of interstate war onset forward in the following aspects: Compared to previous studies on the same issue, it tested the impact of maximum number of factors. In the preceding studies, either the effect of a single factor was explained in detail or those that assessed multiple factors had confined their domain up to four factors at most. Bremer's article incorporated seven of them. Second, the study worked with a new unit of observation (i.e., dyad-types), although it had the chance to work with the standard unit of observations (i.e., dyad-years) after having collected the highest amount of data on the former. Third, the model that he employed was rarely used in the study of interstate war onset.

1.3 Research Question and The Structure of the Thesis

The provocativeness of Bremer's article in the aspects mentioned above call for a critique. In light of this goal, the question that this thesis asks is the following: Did Bremer's study demonstrate the conditions that facilitated interstate war onset aptly? If so, are his findings still relevant? To answer these questions, this thesis is organized as follows: The following chapter reviews the academic discussion about the factors that Bremer chose as the explanatory variables of interstate war onset. The third chapter elaborates on the method that Bremer used. The fourth chapter replicates the results of Bremer's analysis through this method, re-runs the analysis in R Studio for years between 1816 and 2007, compares two time periods and discusses the reasons behind the identified similarities and differences. In the fifth chapter, the thesis assesses the adequacy of Bremer's article from four dimensions, namely the choice of observation unit, data, model and paradigm. The last chapter concludes.

2. RATIONALE FOR EXPLANATORY VARIABLES

Multiple factors enable the outbreak of interstate wars and there is no consensus on how and the extent to which they affect the latter. Thinkers, statesmen and scholars argued for the influence of different determinants. From among those, Bremer selected geographical proximity, relative power, power status, democracy, development, and militarization. Hence, in this chapter, we present the intellectual and scholarly arguments asserted about the impact of each of these factors.

2.1 Proximity and Interstate War Onset

Geography has been the starting point of explanations about the outbreak of interstate wars. As states consolidated their power and nationalism became a solid ideology, the social meaning of border and territory intensified and eventually became a potential conflict issue. However, this ‘obvious correlation’ between geographical contiguity and the onset of interstate wars had different characteristics in different periods in history.

Until the early twentieth century, both land and sea-wise contiguity were major elements of interstate competition. While the former has been prevalent without interruption, the relative importance of the latter has reached its maximum during this period. As thinkers and statesmen like Alfred Mahan and Halford Mackinder theorized, until the early twentieth century, great emphasis was given to the importance of controlling the sea (Cox 2008). By states, sea and ocean were considered as additional zones of competition and potential war. This was not surprising since it tuned with the history of great powers who engaged in such a competition due to colonization activities that they ran hundreds of miles away.

The rest of the twentieth century until World War II continued to host a complex relationship between proximity and war. On one hand, distant locations of seas were not potential conflict zones as they were so, because the rising German threat as a land power

pooled other countries' attention in continental Europe. States that fought the Second World War were more or less located within the same area. On the other hand, we observe that being distant from each other - even being on different continents- did not hinder states from fighting with each other. A typical example of this condition is the active participation of the United States in the Second World War and fighting against Germany. In the second half of the twentieth century, most wars still belonged to proximate states. The Arab-Israel wars, Iran-Iraq War, India-Pakistan War, Ethiopia-Eritrea War all took place between neighbors. However, 'overseas wars' also took place. France and the United States fought wars in Vietnam. Likewise, the United States fought wars in Iraq and Afghanistan.

This quasi-smooth relationship between proximity and war onset can be traceable also in scholarly work. Some early explanations, like Boulding's (1962) 'loss-of-gradient' argument, suggest that a clear inverse relationship existed because states become less capable in their activities the more they trespass on their close neighborhood. Hence, they would be less capable of fighting a far war compared to a war in its environment. Over time, scholars credited the idea that proximity as a constant factor cannot explain the variation in the occurrence of wars across different regions but can have an opportunity-providing role (Vasquez 1995). For example, being neighbors is an adequate domain to fight a war for states that have territorial disputes (Vasquez 2008). Even such a disputed context does not exist, scholars argue that less proximity leads to more probability of war because it increases their interaction frequency.

Although this view is intuitive and appealing, it is criticized by the liberal strand of the discipline. (Vasquez 1995). According to Kegley (1995), being closer facilitates trade, cultural exchange, both of which are catalysts of dyadic peace. Increasing trade volume makes war more costly, where cultural exchange is an important first step towards decreasing hostile intentions. However, this opposing view is somewhat weak, particularly given the fact that contiguity is a direct source of territorial conflict, a primary facilitator of militarized conflict (Senese and Vasquez 2008).

2.2 Power Difference and Interstate War Onset

Power is central to the analyses about interstate war onset. Difference in power levels between competing actors are, in various directions, suspected to be affecting their possibility to fight each other. In this regard, the relationship between alliances, multiple states or state pairs (dyads) became an object of investigation in the international relations discipline.

Balance of power is the first and most influential analytical concept to scrutinize outbreak of war between actors. It is considered to be the governing principle of state behavior in the international system since 15-16th centuries (Sheehan 1995). Despite the ambiguities in its meanings, its main idea is the following: Power-pursuant states try to balance their power through internal or external methods: The former implies mainly accumulating military and economic power and the latter refers to forming alliances or damaging the opponent's alliance (Cashman 2004) (Kadera and Morey 2021).

Since the acceptance of its primacy, analysts have concluded that the disruption of balance of power in any system paved the way for war. Accordingly, states that disrupt the balance of power perceive to threatening for other states. For that reason, the threatened states resort to war to reduce their adversaries' power level. After such wars, the system rebalances (Kadera and Morey 2021).

Opposingly, hegemonic theories argue for the positive relationship between power parity and wars. Hegemonic theories of war onset mainly refer to the power transition theory, as per which power equality is a necessary condition of war. At the same time, the possibility of war between a hegemon (a more powerful state) and a challenger (a less powerful state) is highest at times when the latter economically or militarily overtakes the former.

In order to demonstrate the relationships mentioned above, both strands invested much of their efforts in great power systems. In terms of this balance of power of context, the failure of the counter-France coalition to balance French power was the fundamental

reason for the Napoleonic Wars (Bruun 2008). The distorted balance of power emanating from Germany was also the underlying principal cause of World War I. Likewise, the failure of Britain, France, and less weaker states of Europe to balance German power led to the onset of World II Europe. On the other hand, Organski and Kugler were the first scholars who observed the argument of power preponderance comprehensively. Accordingly, the Franco-Prussian War, the Russo-Japanese War, and the two World Wars conceptualized as 'system changing' wars, had broken out at times of power parity and dissatisfaction of the overtaking state. (Organski and Kugler 1980).

The implications of the balance of power and hegemonic theories in the context of the international system wars also opened up a discussion about the importance of polarity. Polarity implies how power is distributed among states, and most of the time, the number of great powers in the world determines the number of poles. Relatedly, the concept of power concentration defines the extent to which power is concentrated in the hands of a few states. These two important concepts, however, have not yielded a decisive conclusion about the outbreak of wars yet. For example, according to Wayman (1984), multipolarity is a weak correlate of the periods of relative peace from the 19th century until the Second World War. Similarly, Levy argues that throughout the last five centuries of humanity, fewer wars took place at times of multipolarity (Levy 1983). Contrarily, some studies show no effect of polarity on the number of wars in the international system (Bueno de Mesquita 1978; Hopf 1991; Kegley & Raymond 1994).

Analyzing the impact of relative power outside of great power systems started as of the second half of the Cold War. Most of these increasing share of non-great power systems in the literature belong to the studies that employ are dyadic approach. Bueno de Mesquita (1980) was one of the first scholars who studies the onset of wars through a large number of dyadic observations. The findings of the power preponderance strand that have been later on confirmed also by Lemke (2002) for regional and sub-regional hierarchical systems, also through a dyadic analysis. For example, in Latin America, between 1865-1980, wars mostly broke out after processes where the dissatisfied challenger became as powerful as the local dominant, where the absence of this case never resulted in war (Lemke 1995). Most recently, Bennett and Stam (2004) used a dataset consisting of more

than 750000 dyads to identify the correlates of interstate wars. Contrary to Lemke, they find no evidence that support the dominance of a single factor.

2.3 Power Status and Interstate War Onset

Is war mainly a major power 'business' and does having a major power status make a state more likely to fight? These are questions that philosophers and scholars have asked since they started attributing different power categories to states. This attribution became an analytical concept since Leopold Ranke's study called "Great Powers" – which covered the formation of Concert of Europe, - and became systematic within the context of this concept (Danilovic 2002). Although with less frequency, the concept of 'minor' power accompanied 'great' or 'major' powers in scholarly work.

There are different definitions and conceptions of great powers and Levy (1984) presents a rich overview of their diversity in the discipline. While conveying all of them is impossible due to space limits, it is necessary to mention a few: Accordingly, George Modelski designates the great power status to states that are eligible to fight a major war. Similarly, historian Alan John Percivale Taylor assigns this status based on a state's fighting capability. On the other hand, David Singer and Thomas Cusack argue that instead of intensity, military readiness and success score in wars render some states as great powers.

Levy himself defines great powers as those that are different than others in terms of their military capabilities, interests, general behavior, and perception in the eyes of other states in dispute settlement contexts. His criteria in these aspects are as follows: Great powers' military capabilities should make them fearless to any other state in the international system except their equivalents. Moreover, this capability allows them to project power beyond their borders both for offensive and defensive operations and actively support their allies. Through its military capability, a great power should also be able to pose a potential threat to other states' territory.

According to Levy, the interests of great powers transcend their regional environment. Systemic interests are embedded in their national interests (O'Dell 2019). This makes them care about the continental and even global balance of power on a regular basis. This large and ambitious domain of their interest distinguishes their set of behaviors from other states. Frequency of interaction with other powers and resorting to use of force are among those.

The unique perception of great powers in the eyes of non-great powers is credited by Levy as well as by Buzan (2018). Both scholars underline that these states' potential moves in regional and global issues are integral to all other states' calculations. Specifically, the uniqueness of great power status is reflected through privileged roles claimed in key institutions of the international system (e.g., the U.N.) and dispute settlement contexts, like being guarantors.

Given these features of major or great powers, it is plausible to expect their insistence on protecting their interests even through engaging in a conflict. Although scholars disagree on whether the impact of power status is direct or indirect (i.e., accompanied with other factors like democracy (Campbell and Morgan 1991), status-quo orientation (Geller 2000), polarity and status competition Wohlforth (2009) and many others), it is demonstrated to have a statistically significant effect on war onset, e.g., most recently in Clark et. al. (2008).

Chiba et.al. (2014) grounded the superior conflict tendency of major powers compared to minor powers on differences stemming from "observables" and "major power culture". Observables refer to material resources, and according to Chiba and his colleagues, they are more available to major powers. Hence, major powers become more active in foreign policy. Major power culture refers to factors that are exempt from measurable material capabilities. Accordingly, more ambitious goals and different security conceptions aggregate into a different culture for major powers, making them more likely to engage in wars than minor powers. Differently, scholars also highlight the correlation that major powers have mostly been European states so far and the possibility that the European culture may have constituted the war-proneness of major powers.

2.4 Alliances and Interstate War Onset

Alliances are integral to international politics. States' support-seeking behavior to ensure their security have been as old as history. Despite NATO's exceptional lifetime that creates an "ever-existing" and "everlasting" image of alliances, alliances are demonstrated to be transient in history (Bremer 1992). This nature of alliances renders them a topic of investigation for their impact on the outbreak of wars. However, Kenwick and McManus (2021) warn us against investigating the relationship between alliances and war onset in isolation because the former is in interaction or coexists with other factors of international politics most of the time. By having credited this warning, scholars investigated this possibility for two groups: Signatories vs. other states and among allies (Kang 2012).

Whether joining alliances makes their members more or less likely to engage in a war with other states has been controversial. For example, Levy (1981) demonstrated that for major powers, such a relationship was century-specific. Similarly, Gibler and Vasquez argue that alliance type matters. In this regard, they find that those that involve major powers who won their last wars have been more likely to fight than those who do not. On the other hand, Kim (1989) demonstrated that for the alliances that existed between 1816 and 1975, being in equal capabilities increased their possibility to fight with each other. Moreover, when two states are already in an escalated dispute, presence of an alliance membership for any of these states can facilitate the dispute's transformation to a war (Leeds 2005).

As far as the possibility of war between allies is concerned, we see interesting results. While Bueno de Mesquita (1981), surprisingly argued that allied states were prone to fight than non-allied states, Later on, Ray (1990), Maoz and Russett (1993) and Senese and Vasquez (2008) found the opposite. According to these scholars, being members of the same alliance decreased states' possibility to point their guns to each other. Although alliances are tended to make their members more peaceful, the "alliance paradox" is always active, making opponents feel more insecure (Weitsman 2010).

Another important point that Weitsman underlines is avoiding isolated analyses, i.e., research limited to assessing only the impact of the presence or absence of alliances on systemic or dyadic peace. In this regard, she emphasizes the impact of alliance types. Due to their different commitments (information sharing mechanisms, military aid, type of military assistance etc.), the tendency of alliances to engage in war vary. Thus, alliances and war analysis should also include such factors.

2.5 Democracy and Interstate War Onset

The most popular question asked by scholars since Kant is whether a world consisting of democratic states is the key to ending wars. Extensive research on this question suggests that democratic states have not fought each other and are not tended to do so (Doyle 1986: Rummel 1995). Even after controlling for peace-promoting factors like the absence of contiguity, the inclusion of hegemonic powers in the conflict, and geoeconomic factors associated with democracy, democracy's war-curbing role is justified (Levy 2013).

The reasons believed to be underlying this phenomenon, however, are not uniform. While some argue for the preventive effects of strong roots of democratic norms and political constraints on the executives (Maoz and Russett 1993), others underline the fact that (most) democratic states are advanced industrialized countries and 'have a lot to lose' economically from wars.

The strong correlation between the presence of democratic states and (almost) the absence of wars has been subject to criticism. Rosato (2003) scrutinizes the causal logic of the democratic peace theory and argues that the intermediary factors of the causal mechanism, i.e., externalizing domestic norms of conflict resolution, relative accountability to pro-peace interest groups, and slow reaction mechanism in the face of attacks, are not reliably present. Other scholars take Europe under scrutiny and argue that it may not be democracy itself that made the continent more secure. Instead, they suggest considering the impact of the U.S. nuclear umbrella and Marshall Plan as the initial providers of development, which then set the ground for a safer Europe (Pietrzyk 2002).

Nevertheless, as Kauppi and Viotti (2011) put it, democratic peace is one of the few law-like findings in the international relations literature.

2.6 Relative Development and Interstate War Onset

It is hard to isolate the concept of development from other key concepts of international relations. For example, for a state that increases its economic power, it may also imply that she is becoming more developed (McMillan 1997). In short, the operationalization of the concept is prone to different interpretations and research strategies. Meanwhile, the acknowledgment of the relativity of the concept of development led scholars to study this topic mostly at the dyadic level (Cashman 2004). Hence, it is necessary to review a bunch of them.

For example, from a liberal point of view, the interwovenness of other concepts with the concept of development would hold for 'interdependence'. In this regard, they see economic interdependence as an important indicator of development and argue that it decreases the possibility of wars between states. Another dominant liberal argument links the impact of countries' economic development through trade. Rosecrance argues that, reaching higher levels of socio-economic development can lead states to become a trading-state instead of a military-politico state (Hegre 2000), which in turn, decreases dyads' possibility to fight.

The scholarship suggests answers on the relationship between development and interstate war onset also from an institutional perspective. States' political and economic institutions as indicators of development are demonstrated to be affecting their tendency to engage in a war with each other. Accordingly, democratic and inclusive political institutions have higher levels of development while non-democratic and exclusive institutions imply lower levels. The more dyads' institutions are similar in terms of these features, the less they are likely to use force against each other (Souva 2004). In other words, relative development levels are determinants of interstate war likelihood. According to Souva's elaboration on the related literature, factors like ideological

alignment and negative expected utility from a war may be deterring these states from pointing their guns at each other.

An important strand of studies that investigated the relationship between development and war onset stuck to the economic position of great powers. Britain, France, and Germany (except for some interruption), some managed to be top-tier economic powers in the post-Westphalia system. Meanwhile, states like the Netherlands and Portugal lost their positions over time. While some had a steady, moderate position, some -like South Korea -took off from lower ranks to the world's top ten economies. The economic competition to maintain, deepen or repair these economic differences has accompanied the outbreak of wars throughout history.

The tradition that rigidly reduced development to the economic domain was the Marxist-Leninist paradigm. Two major approaches, in this respect, bring relatively different explanations about the onset of dyadic or systemic wars. A major branch of the Marxist-Leninist school emphasizes the interests of the ruling class as the driver of interstate wars. According to Lenin, ruling classes who controlled the capital were bound to export their capital surplus through wars. The second strand of the system-level Marxist-Leninist school focuses on system-level patterns. It underlines the self-insufficiency of capitalist states leading to aggressive and imperialist foreign policies, which eventually end up with war (Levy and Thompson 2010). Accordingly, wars break out either because of excessive production, which leads capitalist countries to seek other markets, diminishing return rate of capital in the domestic economy, or need for raw materials to continue high level production. For proponents of this second strand of Marxists-Leninist perspective, the U.S., for example, had engaged in wars in Vietnam and Iraq due to its need for raw material (Levy and Thompson 2010). Wallerstein crystalizes the relationship between systemic wars and world-economy by arguing that the former is the consequence of the interaction hegemons and economic challengers of the economic system of the world, where the latter push forward a permanent change that favors its interests (Levy 1985). With regards to the initiation of wars between two non-great powers, the Marxist-Leninist economic paradigm has yet to find evidence. Nevertheless, several wars are demonstrated to fit the tenets of this paradigm. The wars between Bolivia and Paraguay (1932-1935),

two Iraq Wars of the U.S.-led coalitions (1991 and 2003), Iran-Iraq War (1980-1990) were also based on the main motivation to ensure control over the oil resources. The same motivation applies to the uranium resources that led to a war between Libya and Chad in 1987 (Colgan 2013).

2.7 Militarization and Interstate War Onset

A contested variable whose impact Bremer also wants to test is militarization. The concept is defined in several ways. According to one, militarization is an intentional, explicit preparation for war in cultural, symbolic, and material realms (Bickford 2015). Within the material realm, a more sophisticated definition combines three factors, each consisting of relative measurements: i) “the ratio of the number of heavy weapons systems available and the number of the overall population” ii) “the contrast between the total number of (para)military forces and the number of physicians and the overall population”, and iii) the comparison of military and expenditures in terms of their share in GDP (BICC Global Militarisation Index 2022).

Much more limitedly, Bremer adheres to the material dimension and conceives of this phenomenon as allocating a state’s resources to military readiness to fight a war. To an extent, military readiness is a function of military capability. On the other hand, as Bremer underlines, a one-to-one relationship does necessarily exist, and for that reason, this is a distinct factor that needs to be accounted (Betts 1995). In this regard, an important dimension is states’ conflict history. If a dyad had a non-problematic relationship and escalation to a possible war is something new to states within, they militarize gradually and linearly. Contrarily, if states have an on-an-off conflictual history, their military readiness does not have a linear characteristic and moreover, it has ups and downs. In other words, the impact of militarization may depend on the phase at which states experience it. Thus, there is no single type of militarization for all states. In the context of war onset, this implies that the impact of militarization is heavily conflict history specific and vary across dyads.

Another important distinction suggested by Betts about military readiness is between its operational and structural dimensions. The former and the latter refer to short-term and long-term preparations, respectively, and most of the time, one is achieved at the expense of the other. Hence, while operational preparation is a less serious threat for the close future, structural preparation poses a long-term threat; both of which have different temporal implications.

Militarization and war possibility has also an indirect relationship. When the former curbs democracy's pacifying impact at the monadic level, it makes a state more likely to become aggressive (Crawford 2021). Accordingly, militarization enhances domestic polarization and intolerance, institutionalizing fear in a society. In turn, it hampers citizens' role as vanguards of democratic institutions. As a result, decision-makers become less accountable in their foreign policy decisions, including when deciding to initiate a war. Although this same logic can easily lead to a security dilemma, a specific study that particularly addresses this relationship for dyads lacks.

2.8 Chapter Conclusion

Bremer presents the factors mentioned above as *the* usual suspects in the outbreak of interstate wars. For most of them, there is no consensus about their effect, both in terms of magnitude and direction. Proximity has mostly been perceived as a catalyst, while liberals oppose this view. The discussion of the impact of relative power gave birth to two different grand schools of thought that still compete today. Like relative power, power status fails to designate whether a state is prone to engage in a war. Alliances, similarly, attract different views about their peaceful impact, and some scholars even argue that trying to measure it is obsolete because of its interaction with many other variables. Besides being highly subjective and hard to operationalize, development also suffers from this interwovenness. Although the impact of democracy – particularly for democratic dyads – and militarization are slightly more concrete, disagreements exist within the related-literature. The next chapter presents the methodology that Bremer adopted to end the ambiguity about the effect of these usual suspects.

3. METHODOLOGY

The problem of identifying the conditions that accompany the outbreak of interstate wars attracted diverse methodological approaches. As behavioralism encouraged data gathering, measurement became a key goal, and statistical techniques diffused the discipline, quantitative methodologies became widespread. However, until the introduction of the methodology presented below, the studies that resorted to quantitative methodologies fell short in several aspects. The common features of these studies can be summarized in three ways: First, observations were mostly limited to great powers. Reasons are manifold: Above all, scholars credited the Waltzian perspective that in any system, the most influential units determine the context for other less influential units. Second, the fact that great power wars are the most destructive forms of wars urged scholars to focus on these wars. Indeed, most lives lost due to wars in the last five centuries are the result of wars that occurred between great powers, so investigating these wars deserved collective effort. Third, a great power system is different from a system that involves non-great powers, so "significant patterns of Great Power behavior may be obscured by noise generated by smaller states operating in more restricted regional systems" (Levy 1983, 4). Also for that reason, the great power system requires separate analysis. Due to the prioritization of great power conflict for reasons mentioned above and insufficiency of data on non-great power states, most research focused on the former. Although non-great power observations increased over time (; Lemke 1995; Lemke 1996; Midlarsky 2011), their share in the total number of observations was moderate.

Second, either a single factor - power, represented as material capabilities - (Bremer, Singer, and Stucky 1972; Bueno de Mesquita 1978; Garnham 1976a; Garnham 1976b) or a scarce number of factors - e.g., alliances included - (Organski and Kugler 1980) representing the prevailing realist paradigm, have been tested. However, as different grand and mid-level theories emerged, so did the necessity of testing the impact of variables representing those theories. Moreover, the impact of suspected factors has mostly been tested in isolation, a stance contrary to statistics tenets, as the impact of a

factor may dramatically change with the coexistence with another one, both in magnitude and direction.

Third, the regression techniques used in these analyses have been either linear, logit or probit. As it will be elaborated below, modeling the patterns of event counts - in this case “war cases per dyad-type” - may not be appropriate for these techniques (King 1989; 1999).

Identifying the factors that accompany wars is a multi-staged task. First, suspected factors should qualify as ‘correlates’. In other words, one should observe that the variation in these factors should systematically lead to a variation in the number of war onsets. This goal brings up the following question: *What to observe as the suspected factors and for whom?*

The latter part of the question above designates the unit of observation and to relate it, Bremer resorted to the ‘dyadic’ approach, i.e., observing the presence of the potential conditions between *each* pair of states in each year. The dyadic method has become the most widespread unit of observation after the abandonment of system-level analysis and greatly contributed to the expansion of knowledge in international conflict studies. Meanwhile, the former part of the question refers to Bremer’s dependent and independent variable choices, which are presented below in detail. Subsequently, this chapter elaborates on the model.

3.1 Data

By combining Buhaug’s (2005) replication data and the Correlates of War data (v4.0) embedded in the *peacesciencer* package in R software (Miller, 2022), this study compiles data on the following seven factors for 956,145 dyads for years between 1816 and 2007. In other words, 956,145 dyad-years exist (e.g., Greece-Turkey-1965). After dropping dyad-years with missing information, the number of dyad-years reduces to 463,387. Subsequently, we binarize all variables, where 1s for independent variables represent the

most war-prone conditions as per Bremer's findings. The binarization criteria and the data sources for variables are presented below:

3.1.1 Dependent Variable

Interstate War onset: The dependent variable is the total number of wars onsets per dyad-type. It is a count variable, in other words a nonnegative and integer number. In our data set, the maximum value for this variable is 13 and the minimum is 0. For the definition of war and data, this study utilizes the latest version (v4.0) of the Correlates of War project (Sarkees, Reid, and Wayman 2010).

3.1.2 Independent Variables

Geographical proximity: For geographical proximity, we rely both on the Direct Contiguity (v3.2) and Colonial/Dependency Contiguity (v3.1) datasets of the Correlates of War project. Direct Contiguity has two components, land, and sea contiguity, where the upper threshold for the latter is 150 miles. If countries are either directly or through a colony/dependent entity contiguous, we assign 1, otherwise 0 for this variable. We exclude the dyads for whom direct contiguity data are not recorded. For dyads where colonial/dependency data is lacking, we refer to the direct contiguity information.

Moderate Power Difference: To assess the impact of relative power on war possibility, we refer to the Composite Indicator of National Capabilities (CINC) score of the National Material Capabilities dataset (v4.0). Large power difference corresponds to a ratio of 5:1. Moderate power difference and large power difference are coded as 1 and 0, respectively.

Alliance Membership: For alliances, we utilize the Formal Alliances dataset of the Correlates of War project. Hence, if dyads belong to any kind of common alliance, we assign 1, otherwise 0.

Absence of Democracy: For democracy, we refer to the Polity IV dataset. If states' democracy scores are equal to or larger than 5, they are considered as 'democratic'. If both countries are not democratic, this variable is coded as 1, otherwise 0.

Major power status: For the number of major powers in a dyad, we refer to the State System Membership dataset of the Correlates of War project. If one or both states are major powers, we assign 1, otherwise, 0 (i.e., no major powers exist in the dyad). In Bremer's study, major powers correspond to great powers.

Both developed: In order to assess the impact of the difference of economic development levels, we refer to the National Material Capabilities dataset once more. If a country's share of economic power (i.e., iron and steel consumption and energy consumption) in the global economic system is greater than its share of demographic power (i.e., urban and total population), it is considered as economically developed. As per this criterion, if both countries within the dyad are developed, we assign 1, otherwise 0.

Both militarized: Militarization level is a static indicator which corresponds to a countries' level of military preparedness. We code the level of militarization based on Correlates of War Material Capabilities dataset (v4.0) according to the same rule applied to the development variable: A country is considered as 'militarized' if its share of military capability (i.e., number of military personnel and military expenditure) in the global system of international relations is greater than its demographic capability. If both countries are militarized, we assign 1, otherwise 0.

The lifetime of a dyad ($\ln(\text{dyad-year})$): Although this variable is not based on theoretical foundations, its addition is necessary axiomatically: While some dyads exist in the international system for centuries, some do for decades. This data is log-transformed for statistical purposes.

The seven independent variables at hand implies that 128 (2^7) potential dyad combinations exist, each having experienced a different number of wars including 0. After dropping dyads due to missing data, this number reduced to 125. As presented in

Figure 1, we see that 125 dyad types experienced 114 wars in total. Nearly 70% of these (85/125) did not experience any wars. This is not unexpected, as non-war cases are more common than war cases between dyads in history. Similarly, 20 (16%) of those dyad types have experienced only a single interstate war in the same period of time.

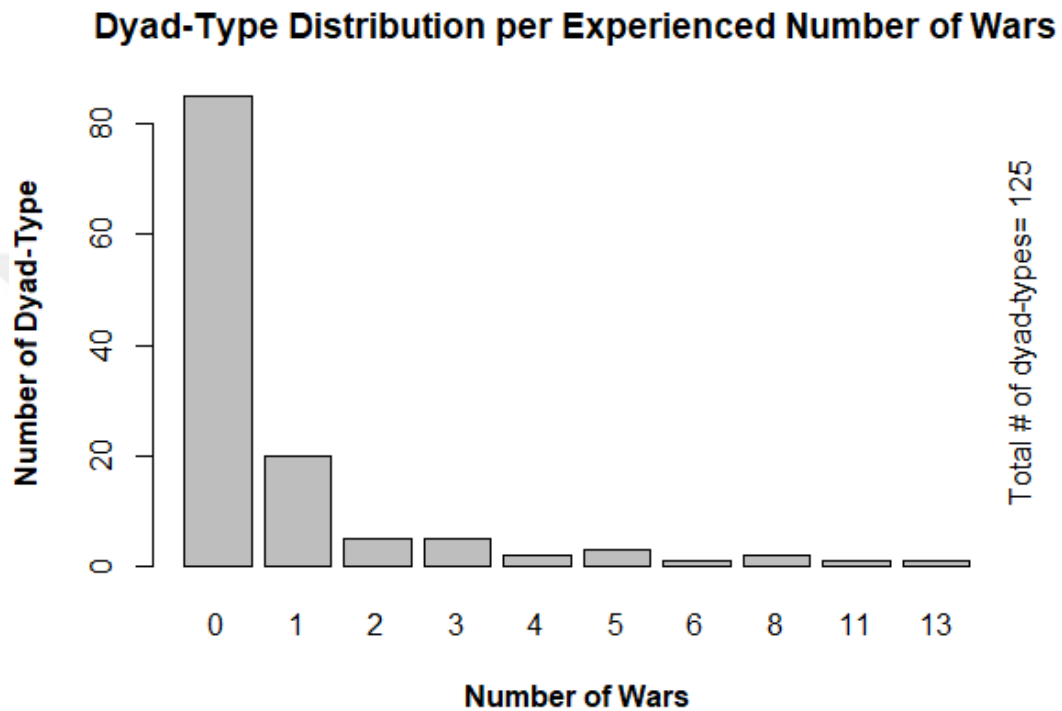


Figure 3.1: Dyad-Type Distribution per Experienced Number of Wars

As the number of wars increases, the corresponding number of dyad types decreases dramatically. We see that five dyad types each have experienced two wars and another five have experienced three. During this period, two different dyad-types have fought four times and three different dyad-types fought five times. While six wars occurred in a single type of dyad so far, another two dyad-types experienced eight wars. The second most war-prone dyad has a record of eleven wars. Lastly, the dyad-type that experienced the greatest number of wars engaged thirteen wars in this period of time.

The next section aims to demonstrate the quantitative relationship between our seven independent variables and the number of wars each type has experienced. Given that regression analysis is a widely used method to scrutinize such relationships, this study

employs this technique. The details of the model and the rationale for choosing will also be discussed.

3.2 The Model

Regression models depict the quantitative relationship between dependent and independent variables. For different types of variables, different regression models exist. In our analysis, the key feature of the number of war occurrences is being a type of discrete variable which is nonnegative and that does not have an upper bound (King 1989). In other words, a dyad-type can experience from 0 to an infinite (theoretically) number of wars. Hence, our model needs to be suitable for this feature of the data.

Given that, one should designate the structure of the model. In this stage, a key feature of event count data plays-in: Being non-negative integer values. For that reason, the model cannot take linear or logit forms because while linear models can produce negative numbers, logit models limit the dependent variable between 0 and 1. Having eliminated these alternatives, King suggests the following model structure, where in this analysis Y_i denotes expected the number of occurrences of wars for each dyad-type with mean λ_i ; $\mathbf{x}_i$, a vector consisting of the seven independent variables and $\boldsymbol{\beta}$, the 7 x 1 parameter vector, and N the number of dyad-years per dyad-type (Equation 1). The results that will be discussed in the following section are discussed based on the estimators produced by this model.

$$E(Y_i) = \lambda_i = \exp(\mathbf{x}_i\boldsymbol{\beta} + \ln(N_i))$$

Equation 1: Poisson Model

4. RESULTS AND DISCUSSION

This chapter first presents the results of a replication of Bremer's analysis that cover from 1816 until 1965. Subsequently, it demonstrates the findings of the analysis re-run for the period between 1816 and 2007 and allows us to compare how each factor impacted the likelihood of war onset for the two time periods. Subsequently, it discusses the reasons for identified similarities and differences.

1816-1965		1816-2007	
<i>Dependent variable:</i>		<i>Dependent variable:</i>	
War		War	
Proximity	2.535*** (0.453)	Proximity	1.835*** (0.328)
Moderate Power Difference	0.799*** (0.252)	Moderate Power Difference	0.850*** (0.216)
Alliance Membership	-0.882** (0.351)	Alliance Membership	-1.114*** (0.270)
Absence of Democracy	-0.094 (0.228)	Absence of Democracy	0.176 (0.190)
One or More Major Power	0.843*** (0.284)	One or More Major Power	0.290 (0.222)
Both Developed	-1.726*** (0.555)	Both Developed	-1.767*** (0.373)
Both Militarized	0.163 (0.268)	Both Militarized	-0.134 (0.203)
Lndyadyear	0.694*** (0.148)	Lndyadyear	0.409*** (0.097)
Constant	-6.613*** (1.437)	Constant	-3.953*** (0.992)
Observations	119	Observations	125
Log Likelihood	-88.764	Log Likelihood	-118.523
Akaike Inf. Crit.	195.528	Akaike Inf. Crit.	255.047
Significance Levels	*p<0.1; **p<0.05; ***p<0.01	Significance Levels	*p<0.1; **p<0.05; ***p<0.01

Table 4.1: Regression Results

4.1 Results for 1816-1965

According to the replicated results, proximity was the strongest factor and positively affected the likelihood of war onset from 1816 until 1965. For the same period, the presence of two developed states was the second most powerful factor with a positive impact. In other words, the absence of at least one developed state was harmful to peace. With almost half the size of the effect of development, at least one major power rendered dyad-types more conflictual in the same period. We see that being members of the same alliance created a more peaceful condition, almost with a similar likelihood but less reliability. In the same period, the least powerful factor for war onset was the presence of moderate power difference.

4.2 Results for 1816-2007 & Discussion

For 1816-2007, the results demonstrate that proximity was still the strongest predictor of interstate wars. However, its impact decreased considerably. This result can be attributed to various factors: First, the increased technological capabilities of states may have reduced the distance obstacle in the eyes of states. The more states gained access to remote geographies, the more they became eligible to project military power and as a result, have become tended to contemplate aggression towards others. For example, planes were not used in international military attacks until the Second World War. The post-1965 period corresponds to a time span, where planes had already become means of military attack (Black 2023). The wars the United States initiated against Afghanistan and Iraq can also be attributed to these technological advancements.

However, for two reasons, the relationship between U.S-Afghanistan and U.S-Iraq cases and the decreasing impact of proximity may not be non-debatable: First, the post- Cold War history of war tells us that proximity still matters; wars that broke out between Azerbaijan and Armenia (1991-1994) and Ethiopia-Eritrea (1998) reminds us of this fact. The second challenge comes from an offensive realist perspective: Superpowers inevitably reach a level of hubris, at which they want to have decisive control over the flow of the world's economic resources. This goal may have coincided with these

resources belonging to a country that was not proximate to the U.S., that is instead eleven thousand kilometers away. In other words, it is very unlikely to see such an international behavior from a non-superpower. Relatedly, for a state, one of the important propositions regarding gaining a superpower status is to have cowed its backyard. This implies that superpowers do not have potential and ‘worthwhile’ opponents to fight in its neighborhood. In other words, if they fight a war, this is highly likely to occur far from its borders. Hence, the proximity arguments for superpowers may be obsolete.

We see that the strong, peaceful effect of development has been steady from 1965 until 2007. This result can be interpreted from optimistic and pessimistic perspectives : i) The consistency strong impact of development ii) the steadiness of the impact of despite increasing economic interdependence that was promoted as a facilitator of overall development.

The continuing strong impact of development is not surprising. Advanced economies are those that are likely to also have advanced militaries. To these states, the scenario of two advanced military capabilities confronting each other may signal a large-scale destruction instead of a balance. So, they deter from contemplating wars with each other. For these states, the opportunity costs of wars are high also high. The intensified economic ties render wars as an unthinkable option, despite the substitutability of certain trade goods (Mousseau 2021). On the other hand, Mousseau implicitly confirms the point that we underlined in Chapter two, i.e., hardships of isolating development from other phenomenon of international political life, and suggests us to take U.S. hegemony into account as a correlate of economic development. Accordingly, the peaceful impact of development did not exist by itself alone, but through the U.S. influence that prohibited states making coercive demands from each other like territory or actions that violated trade equality. This, in turn, rendered wars costly for states and decreased their tendency to resort to aggression towards each other.

Another perspective that one may contribute with would argue for the insufficient peaceful effect of development. Why don’t we see an improved impact of relative development on decreasing likelihood of war onset, despite increased economic

interdependence in the world? One obvious answer would warn us against the ‘promises’ of the ‘liberal’ findings, which argue for the pacifying effect of economic interdependence, trade relations etc. Answers that do not belong this camp suggest different explanations. For example, if one considers equality as valid proxy of development, it is possible to find an answer: Overall equality level was steady in the same period (Van Zanden et.al., 2013). In other words, states were more or less as developed as they were in the pre-1965 period, hence, remained equally peaceful in the following period.

A different explanation may be grounded on the view that hypothesizes a positive relationship between power parity and possibility of war onset through state development. Accordingly, new members of the international system (e.g former colonies) and their political development processes affect the neighboring states similarly, which in turn renders dyadic capability differences static over time (Gibler 2017). For these new states, staticness imply power parity overtime where poorly defined borders, unsettled rivalry-creating issues are likely to exist and result in militarized conflicts. This hypothesis justifies the permeable feature of development with other concepts of international politics.

The results also show that for dyad types, the presence of a major power lost its impact on war likelihood. From certain angles, this result may be surprising. Major powers’ increasing share of the world economy since the second half of the Cold War certainly belongs to one of those. The opportunity costs of war made it a less reliable option for many states, particularly for major powers. Given that most of these states were democracies, the presence of major powers should have created an additional peaceful environment within major-major dyads.

The results would be expected to demonstrate a peaceful effect of major power presence also due to the introduction of nuclear weapons among these states. In the post-Second World War period, a significant portion of major powers in the world developed nuclear weapons. The United States used it against Japan in August 1945 and demonstrated the extent of its destructiveness to the whole world. Thus, international society adhered to the

norms of limiting nuclear weapon development and its proliferation. Particularly, the Non-Proliferation Treaty that entered into force in 1970 and its indefinite extension in 1995 contributed to major powers' reluctance to fight wars with each other.

A possible explanation for the irrelevance of the power status of war-likelihood may be grounded on the latter's situation-dependency rather than capability distribution-dependency per se. According to Wagner (1994), situation-dependency implies that states' expectations from potential settlements in different contexts may vary. If parties trust that their relative capabilities as a result of a compromise agreement will enable the latter to be enforceable, they refrain from going to war. In opposite cases, they became more tended to resort to military force.

When the period from 1965 to 2007 is also taken into account, we see that the peaceful effect of membership in a common alliance has increased. We can interpret the reasons for this as follows: This is a period in which the transience of alliances diminishes. Therefore, it is possible to say that its deterrent effects are consolidated and spread over time. In addition, alliances formed between 1945-1990 lasted longer than the previous ones (Leeds and Mattes 2007). Therefore, they had the opportunity to maintain their peaceful influence for a longer period of time.

Leeds and Mattes also show that alliances have become institutions that create cooperation practices in other fields besides military alliance commitments. So much so that while the rate of discussion of cooperation on non-security areas was 17% between 1815 and 1913, 25% between 1913 and 1944, this rate increased to 68% between 1945 and 1989 and 95% between 1990 and 2003. As the liberal perspective emphasizes, this growing collaborative environment may have reduced the possibility of war.

Again, when the period after 1965 is considered, we see that the presence of moderate power difference -albeit slightly- increased its peaceful effect. This confirms the lack of consensus in the balance of power and power preponderance theories. The rationale behind this modest increase can be grounded on the rise in the number of relatively weak states in the international system in the post-second world war period. Although these

states broke free from colonial rule and gained their sovereignty, their institutional capacity was quite weak. Therefore, the probability of the power difference being greater in any dyadic combination increased compared to the previous period and maintained its pacifying impact.

In addition, this situation may result from the diffusion of power from great powers to non-great powers, in parallel with the gradual decline of bipolarity in this period. Accordingly, this “surplus” power may have dispersed throughout other states, leading to forming more hierarchical systems. Studies on dyads belonging to these hierarchical systems showed that the peaceful status quo could be maintained in these systems. (Lemke 1995).

On the other hand, we see that two of the tested factors, absence of democracy and militarization, still fail to qualify as factors that affect dyads’ tendency to go to war. The insignificance of the former should not astonish us for the following reasons: First of all, the causal explanation of “democratic peace” is not unchallenged. Some scholars argue that democracies do not externalize their democratic norms and can even engage in disputes when their interests overlap (Rosato 2003). Another view grounds this pattern on the capitalist features of democracies (Gartzke 2007). Interestingly, some scholars even claim that this pattern was circumstances-specific that stemmed from the common Soviet threat and refer to the rise in the number of disputes between democracies in the post-Cold War period as signs of overturn (Gowa 2011).

Unlike the absence of democracy, militarization continues to astonish with its insignificance. This finding neither favors the renowned deterrence nor security dilemma (those that lead to war) arguments. We can suggest two potential explanations for this case: The impact of militarization (in the form of military build-up) on war onset is likely to become active when there is significant power difference between states (Sample 2005), where this is very much likely to be associated with major-minor cases. Given that major-minor cases are demonstrated to be not correlating with war onset, the militarization finding should not be surprising. Another explanation may be related to the incredibility of militarization activities. Slantchev (2005) underlines that most

militarization processes are not perceived as credible actions by their adversaries, so they fail to function as deterrent or crisis-escalating policy tools.

In addition to the regression results, the extent to which the observed number of wars and predicted number of wars are aligned also needs to be assessed. In Figure 2, we see this comparison for each dyad-type. To start with, one can see that the average predicted number of wars for dyads that have not experienced any wars is close to zero. However, one should be cautious before praising for this accuracy, since the primary goal of modeling is to approximate the rare events amidst more dominantly-frequent observations (King and Zeng 2001).

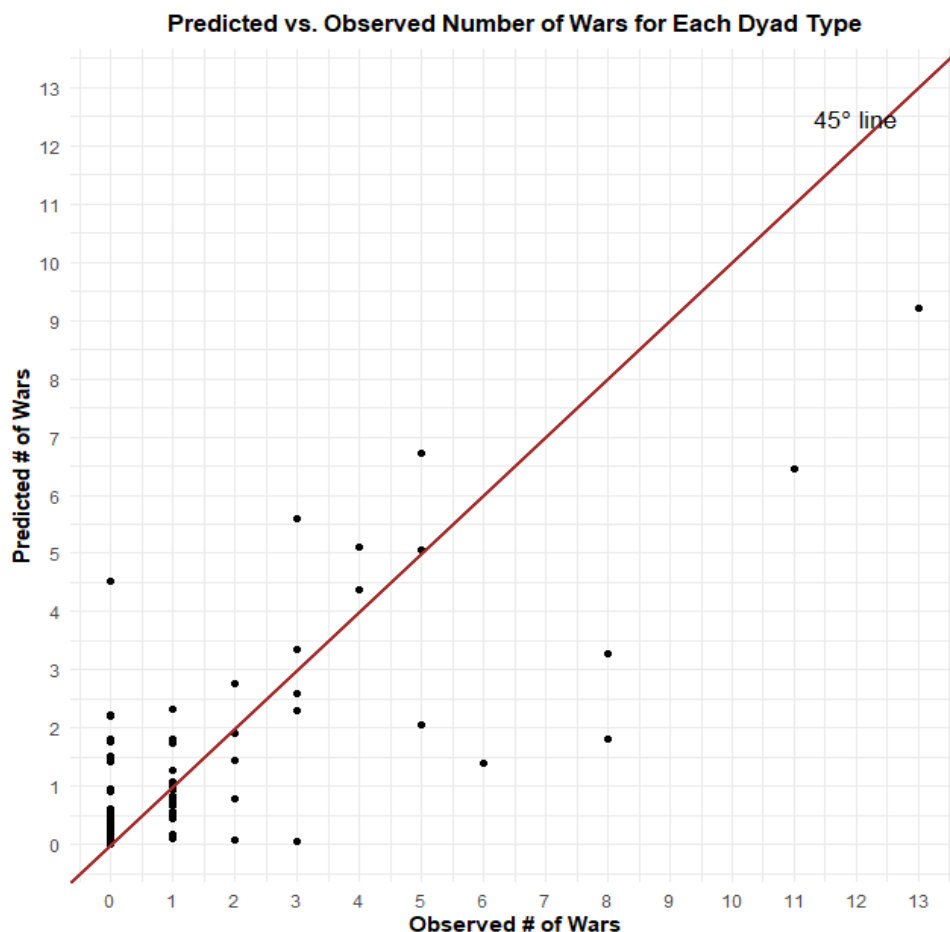


Figure 4.1: Observed Number of Wars vs. Predicted Number of Wars Per Dyad Type

For five types of dyads that have experienced two wars in history, the model expected them to experience 1.5 wars on average. The results are similar for those dyads that have experienced three wars so far. Meanwhile, the predicted number of wars (1.75) is

significantly low for dyads that have experienced four wars. While the model predicts nearly the exact number of wars for one of three dyads-types who fought five times in their history, two of them do not align. One of those non-aligned dyad-type remains significantly (2 wars) below with actual observation (5 wars).

On the other hand, the predicted number of wars for the dyad-type that experienced six wars is 1.5. While no dyad-type fought seven times, the average number of wars for the dyad-type that fought eight times is 2.5. Our Poisson model's prediction for the dyad-type with eleven wars is 6.5. In other words, the model fails to account for half of the wars that broke out within the second most aggressive dyad. Lastly, for the most dangerous dyad-type (13 wars), the expected score is approximately nine. The most dangerous dyad is the one with two contiguous, non-democratic, non-allied, non-militarized non-great powers with moderate power difference, where at least one of the states is economically underdeveloped.

Given these results, one detects a major relationship between the actual observations and predicted results: As the actual number of wars increased, so did the model's inaccuracy. The fundamental reason is the discrepancy - an 'overdispersion' problem- between the model's assumptions and the data's actual feature. This issue and other problematic issues are discussed in detail in the following section.

5. REASSESSING BREMER'S CHOICES

In this chapter, we will assess the adequacy of Bremer's study from four dimensions: His choice of unit of analysis, choice of data, choice of model and 'choice' of paradigm. In all four dimensions, Bremer's study suffers from significant problems.

5.1 Choice of Unit of Analysis

The study of many interstate phenomena through dyads began in the 1960s. As Poast (2016) pointed out, Rudolph Rummel, a political scientist with a mathematical background, introduced this method to the discipline (Dorf and Ward 2013). Over time, the dyadic form has also become widespread in research on interstate war onset and Bremer. At the same, its frequent usage produced supporting and opposing views about its validity. Hence, Bremer's decision to resort to the dyadic method needs a reassessment.

The fact that more than half (60%) of the interstate wars that took place between 1816-2007 occurred between only two countries (Diehl and Wright 2016) constitutes the base motivation for the popularity of the dyadic method. This motivation also applies to "rival" dyads, like India-Pakistan or the USA-USSR, whose conflictual relationships have deep historical and strategic dimensions. Accordingly, these dyads are unlikely to go to war unless directly involved in a dispute in 3rd party countries (Diehl and Wright 2016). According to Diehl and Wright, it may also be sufficient to focus on the relationships between the coalition's leader state and the joiners—which are also dyadic relationships—to account for "coalition formation", a key phenomenon to explain interstate war onset.

However, analyzing the occurrence of wars through dyads is risky, both because a considerable number of wars in history have been fought between more than two states,

and because developments not only between states within a dyad but also between other states can be influential.

A typical flaw is likely to occur by aforementioned rival dyads. For example, Bremer's large dataset includes also rival dyads, and contrary to what is stated above, analyzing rival dyads in isolation from 3rd parties may not be reliable because, as Diehl and Wright (2016) argue, drawing on the work of Diehl and Goertz (2000), these dyads can be affected in various ways by the relationship between 17 different dyads.

On the other hand, the share of the remaining non-dyadic wars, which corresponds to almost half of total wars (40%), is too high to be overlooked. Therefore, using dyads for multilateral and general wars can lead be misleading.

Before all, if dyadic combinations of states are taken in multilateral wars, the number of wars may be inflated. Bremer tried to solve this problem by coding (1) only for originator dyads. For example, Austria-Hungary and Serbia were the 'originators' of the First World War, hence, only Austria-Hungary and Serbia are coded as (1). However, Germany, Russia, France, and Great Britain joined the war shortly after this Austria-Hungary-Serbia dyad engaged in a fight; whereas Italy, Portugal, Romania, the U.S., and Greece also joined in the following years (Croco and Teo 2005). This avoids the bias in the number of wars; however, it increases the number of non-war cases in the dataset and, as a result, may lead to biased results.

We also see the dyadic approach can be misleading in some of its theoretical implications. Although Bremer did not build an argument on the theoretical grounds that will be indicated just below, using the dyadic approach in approaches that treat war as a consequence of bargaining failures can be misleading. For example, we see that the famous "war is a policy tool used despite its irrationality" (Fearon 1995) can be misleading. Also, resolving indivisible goods such as territory may not necessarily be harder than resolving policy disputes, because even in complete information and lack of commitment problem situations, the equilibrium may realize at war (Gallop 2015). Gallop (2015, p.10) describes these two famous inferences as "artifacts of limiting the focus to

two players". In some N-sided scenarios involving third parties, states' preferences are irreconcilable, and war may appear as a rational decision (Gallop 2015).

Lastly, the most popular dyadic unit of analysis unit, dyad-year, suffers from problems not only in the dyad dimension but also in the year dimension. The expansion of war phenomenon severely suffers from this problem. In his study, Bremer stated that expansion should be treated as a separate phenomenon from the outbreak of war, and at the same time, he partially avoided this problem by using dyad type instead of dyad-year as his unit of analysis. It should be noted, however, that when you analyze wars by dyad-year, you fail to observe expansion of war, a phenomenon that is very likely to occur – either completely or partially- in a year (Kroco and Teo 2005)

After all these criticisms, two methods emerge as more constructive solutions: Network analysis and k-adic approach (Poast 2016). Both approaches serve the similar interest that dyads fail to accomplish, i.e., bringing together multiple states in the same system. Particularly through a web of nodes and edges, one can demonstrate the multiple types of relations in which multiple states engage. Compared to the isolated and monotypic (in terms of the relationship type) form of a dyad, this is a more developed form. For instance, unlike the dyadic method, a model based on a network approach includes a component that resembles the dependencies – “second order effect” (Gallop 2015, p.92) - of dyads on third parties (e.g., the impact of the Polish-US relationship on Poland's involvement in the Iraq war in 2003 (Minhas et.al 2022).

The ability of network-based analyses to capture the multilateral dimension of international conflict is reflected in several findings. For example, compared to dyadic regression models, the exponential random graph model built on the network approach yields around 10% fewer false-positive errors than dyadic regression models (Cranmer and Desmarais 2016). Similarly, Gallop's network-based model mentioned above can predict inter-state crises better than dyads. This is an important difference, given that these crises are notions that are likely to escalate into war (Gallop 2015).

5.2 Choice of Data

Another group of criticisms is concerned with Bremer's set of data choices. For the sake of arguing for the impact potential factors through their "presence" or "absence" conditions and, more importantly, for avoiding a model-data mismatch, he coded these variables as either 1 or 0.

Since Bremer resorted to a Poisson regression model to regress a count variable, he had to work with data that conformed to the assumptions of this model. Had he worked with dyad-year observations, he would have had to accept that these yearly observations generate data without memory, which would satisfy the model's assumption. However, this would contradict the reality of international politics since states' relations, especially their conflict histories, undoubtedly impact their future relations. Hence, he turned to dyad-types, a unit of observation that would fit the 'memoryless' feature of the model, where dyad-types were originally products of different combinations of binary options for each variable. - In fact, Bremer could have accounted for temporal dependence by using logit models cubic splines or decaying function, Cox proportional hazard model, or generalized equation models instead of going for the Poisson model; however, this would come at the expense of binarizing the dependent variable (Buhaug 2005) - In other words, Bremer's model measured their effect through the (dichotomous) variance between 0 and 1. However, when the spreads of the variances of continuous variables and a dichotomous variable are considered, it is obvious that the latter is able to explain co-variance with a much more limited variation. Therefore, Bremer has killed the potential of a richer co-variance explanation with this choice.

Second, expressing explanatory variables as 1 or 0 suppresses their diversity. In Bremer's dataset, we see this in the case of alliances and democracy. Unfortunately, Bremer's alliance data does not distinguish among different types of alliances, which implies that whether two countries are members of a military pact, or an entente does not play a role in the current calculations of war outbreak. Given that the types of commitments signal adversaries about the deterrent capability of alliances and, in turn affect their war-initiating calculation, this is an important drawback.

Meanwhile, the democracy data is prone to suffer from a binarization problem for two major reasons: First, in terms of democracy levels, countries lie on a spectrum. Although extreme examples of democracies and autocracies exist, nearly a third of the regimes in the world (65/193) have hybrid characteristics (Economist Intelligence Unit 2023). Relatedly, some countries go through democratization processes at different paces; and the Azerbaijan-Armenia and Russia-Chechnya examples have shown in the 1990s, states can be war-prone due to the rise of belligerent nationalism in these transitional periods (Mansfield and Snyder 1995). However, binarization fails to cover such transitional periods. Second, the democratic peace theory is demonstrated to be “travelling along the democratic continuum” (Altman, Rojas-de-Galarreta and Urdinez 2018, p.4), as the interplay between democracy average and democracy spread, compared to the presence of democratic and/or non-democratic states, produces different war possibilities and outcomes for dyads.

Criticisms related to Bremer’s data choice can even infiltrate into ontological concerns, particularly with regards to power. “Can power be measured?” or “Should power be measured?”, these two questions aptly prevail in the international relations discipline; so they can easily apply to Bremer’s choice. The measurement of material capabilities is considered a *proxy* variable for measuring national power, implying that it is considered imperfect but nevertheless the best available indicator at hand. For example, Mearsheimer has an orthodox view of power in the sense that his two types of state power - latent and military power- both stem from material resources, where latent power is also destined to increase military power (Mearsheimer 2001). Also, Gilpin sticks to the material conception of power and determines that it has military, economic, and technological dimensions, which are exempt from potential intangible components (Gilpin 1981). Hence Gilpin, Mearsheimer and similar scholars, including Bremer think that power can be measurable.

However, the indicator of national power not having strong alternatives other than material capabilities should not hinder one from elaborating on its weaknesses. A potential weakness may refer to the possibility of the aggregate military spending levels

inflating/deflating the case-specific military capabilities of countries. For example, the assessments about the possibility of China attacking Taiwan by taking the military capability of China into account should also consider the extent to which such capability is allocated for achieving an essential amphibious operation.

Criticisms for relying solely on material capabilities skyrocket with those arguing for the immeasurable nature of national power. The context and relation specificity of power constitutes the backbone of these arguments (Guzzini 2009). Nye rightly supports this view with the following questions: “If the battle is in a swamp, does it matter who has more tanks?” or “When you encounter a cyber attack, who do you bomb?” A stimulating warning about measuring power challenges the interchangeability and resource-oriented assumptions of power (Guzzini 2009): Unlike money, power cannot serve as a currency that can be exchanged in international relations because it exists in multiple dimensions for which ‘measurement’ units (if exist) do not match, and hence cannot be added or subtracted. Therefore, an aggregated measurement such as national power cannot exist and concepts like polarity become obsolete unless they cover a specific domain. Meanwhile, resources, which set the foundation of measurements of material power, also cannot be the only source of power. Having legitimacy in the eyes of one’s opponents or counterparts is a non-negligible source of power which can be independent of the resources controlled. If one credits the validity of this argument, then she should refrain from measuring power.

A final assessment of Bremer’s data choices can be made in terms of the variables he chose. In other words, were the explanatory variables that Bremer chose the best ones to examine at war onset? Did he leave out any important variables? Since there is no clear consensus on the impact of almost any possible factor in the war onset literature, it is difficult to put Bremer’s explanatory variable choices into an objective assessment. Nevertheless, even though relevant findings were not consolidated by the time Bremer authored his article, he should have also included one important variable: the presence of a territorial dispute. As Vasquez (2001;2005) and Kocs (1995) demonstrated, territorial dispute is the activation energy - the first important step- that take dyads closer to a war, and Vasquez and Senese (2008) have even demonstrated that territorial disputes do not necessarily take place between contiguous dyads.

Another important point that we need to pay attention to in the selection of explanatory variables is the following: When constructing multivariate models in war studies, we need to be careful when adding a large number of control variables, as they can cause us to make wrong inferences. If one control variable has an effect on another explanatory variable, we may misleadingly interpret the effect of the latter even it does not (Ray 2005). In this respect, the most risky variables in Bremer's study are democracy and development. Most democratic countries may be developed and vice versa. The same relationship would exist also in the negative direction. Thankfully, Maoz and Russett demonstrated in their 1992 study that the effect of democracy on militarized interstate disputes and war onset is not spurious (Maoz and Russett 1992). We don't know whether he had this information or not, but Bremer has no statement on how he approached this issue.

5.3 Choice of Model

One can also criticize Bremer's regression model choice. The choice of the Poisson model is partially correct since regression is performed on a dependent variable consisting of positive integers (King 1988, 1989). In addition, by adopting a dyadic approach, Bremer is also consistent with the model's assumption that observations are independent. However, a Poisson regression model has another important assumption: Equal dispersion. According to the equal dispersion assumption, the model assumes that the mean and variance of the dependent variable (i.e., the number of war) are the same. In cases of overdispersion and underdispersion, the model fit fails. When we re-analyze the data in this Bremer's analysis for 1816-2007, we obtain a variance of 4.37 and a mean of 0.9. In other words, we see that the model's fit reduces due to overdispersion. As we witnessed for more conflictual dyads-types, the model's fit gets severely distorted. The model's overall functionality can be criticized despite its relative success for lower number of wars because the primary goal of such models should be accounting for 'true positives' as much as possible. Thus, Bremer should have chosen a model that also fits this assumption (Milosch 2022). A negative binomial model that relaxes this assumption and appears as an alternative (King 1989).

5.4 'Choice' of Paradigm

Although Bremer does not suggest a causal mechanism for war onset, identifying correlates and arguing for the presence of a dangerous dyad compared to its counterparts implicitly implies the latter. Therefore, Bremer's base motivation for his goal may also be a matter of debate. We can criticize Bremer's work from two similar perspectives, both carrying the main idea that "the probability of war cannot be calculated". The first of these two different perspectives points to methodological difficulty, while the second emphasizes its impossibility within positivist paradigm.

The results of Bremer's study are indifferent to sequence. That is, it is not sensitive to the order in which factors should occur in order to increase the likelihood of war. However, order of occurrence is important because the order in which a factor occurs can affect the likelihood of another factor occurring (Levy 2012). This means that the number of potential combinations can increase considerably. For example, in a scenario where 4 factors are identified, there are $4! = 24$ different sequences. In other words, the start of a war can only occur in 24 different possibilities.

By taking this criticism further, another perspective argues that we cannot identify any causal mechanisms because of uncertainty and incentives to bluff. In other words, uncertainty and incentives to bluff eliminate the possibility of any mechanism emerging as a pathway to the outbreak of war (Gartzke 1999). According to Gartzke, use of force or crises can be predicted, but predicting war onset is equal to flipping coins because the actual factors affecting war, like capabilities and determination, are "unobservable ex ante" (Gartzke 1999, p.570), so they cannot be accounted for. Chadeux's intriguing expression resembles the nature of uncertainty particularly for the latter: "... how much does the enemy know, how much do they know about what I know, about what I know that they know, and so on..." (Chadeux 2020, 1593). What Chadeux and Gartzke underline is not an exaggeration of the real world. These non-concludable attempts of reasoning before wars can well be salient among decision-making circles, and it depicts the tough ontology of uncertainty. However, whether this should hinder scholars from looking for proxy variables for elements of uncertainty is controversial. Some scholars

think that certain behaviors like secret alliance formation or secret military mobilization are those to which states resort against the backdrop of uncertainties they face (Bas and Schub 2016). Even Gartzke, who previously refrained from this attempt, suggested variations in states' estimates of other countries' military expenditure as a proxy variable to account for the degree of uncertainty in the international system (Gartzke and Kaplow 2015). Thus, this contradicting position of Gartzke's on this issue hinders us from disregarding Bremer's motivation for identifying the correlates of war onset.



6. CONCLUSION

Interstate wars are among humanity's most destructive events and have become increasingly threatening to human lives. Nearly eighty percent of lives lost due to wars are the results of those that occurred in the last two centuries. Hence, scholarly work that has been conducted to identify the factors that lead to their onset are decent efforts.

The complexity of war has easily made pundits congruent; no single factor would explain its occurrence. In order to uncover interstate wars' correlates, Bremer resorted to proximity, relative power, power status, alliance membership, absence of democracy, development, and militarization and tested how their presence affected the likelihood of war onset for 1816-1965.

In order to reassess the validity of Bremer's approach, this study replicated the available data for years from 1816 until 2007. According to the results, the presence of proximity, two developed states, alliance membership, and moderate power difference affect the likelihood of war onset in decreasing order. While the first and the last have a positive impact, the second and third variables affect war likelihood negatively. On the other hand, we see that the presence of at least one major power no longer affects war possibility. Interestingly, the absence of democracy and militarization still affects the likelihood of war onset on a random basis.

Such assertive studies are prone to serious criticisms and Bremer's seminal study paved the way for four aspects. Although he was not the pioneer of the dyadic approach, coming up with an encompassing argument about interstate wars after utilizing all-time maximum amount of dyadic data came before all. Despite being a cornerstone unit of analysis in the international conflict literature, dyads' independence and their inability to relate to multilateral war, researchers steer more towards network-based analysis in the future. Meanwhile, working with binary data also comes with some important drawbacks. While it forces us to draw inferences with much more limited variance, it also does not allow

explanatory variables to operate in a continuum, leading to suppressing diverse cases (e.g., democracy) of these factors. Due to these reasons, regressing the number of wars on continuous variables would be more appropriate.

A much weaker point of Bremer's analysis is the discrepancy between the actual and predicted number of wars for more conflictual dyad types. In other words, as harder the models' task became, the more it failed. The primary reason for this mismatch is the violation of the assumption of equal dispersion. While the Poisson regression model assumes that the data's variance and mean are equal, the former is almost four times greater than the latter.

A last and assertive criticism addresses the positivist approach within which Bremer's study operates. Accordingly, unobservable elements of international conflict, particularly capabilities and decision makers intentions, render interstate wars unpredictable. For that reason, sophisticated models and operationalization of potential explanatory variables may remain futile. However, the proponents' reliance on quantifiable proxy variables in their research decreases our confidence in the argument.

This study credits the broader idea that identifying the factors that lead to war is an ambitious task. We may even have to admit that models with multivariate models may fail to produce decisive results, as twelve different studies on war onset between the time Bremer's study was published and 2002 yielded varying results (Ray 2005). However, interstate wars should continue to attract scholarly attention. Scientific inquiry should not abandon such a destructive human act. Given the variety of arguments, theories, and evidence presented in this study, this inquiry should be inclusive of all theoretical and methodological approaches. Only the harmony of diversity can turn this ambitious task into a humble endeavor.

7. REFERENCES

- Adamson, Fiona B. 2018. "The Changing Geography of Global Security." In *The Oxford Handbook of International Security*, edited by Alexandra Gheciu and William C. Wohlforth, 318–33. New York: Oxford University Press.
- Altman, David, Federico Rojas-de-Galarreta, and Francisco Urdinez. 2021. "An Interactive Model of the Democratic Peace" *Journal of Peace Research* 58 (3): 384–398
- Anderson, Paul A. 1983. "Decision Making by Objection and the Cuban Missile Crisis." *Administrative Science Quarterly* 28 (2): 201–22.
- Barbieri, Katherine. 1996. "Economic Interdependence: A Path to Peace or a Source of Interstate Conflict?" *Journal of Peace Research* 33 (1): 29–49.
- Bas, Muhammet, and Robert Schub. 2016. "Mutual Optimism as a Cause of Conflict: Secret Alliances and Conflict Onset." *International Studies Quarterly* 60 (3): 552–64.
- Bennett, D. Scott, and Allan C. Stam III. 2004. *The Behavioral Origins of War*. Ann Arbor, MI: University of Michigan Press.
- Bennett, D. Scott, and Allan C. Stam. 2000. "A Universal Test of an Expected Utility Theory of War." *International Studies Quarterly* 44 (3): 451–80.
- Black, Jeremy. 2023. *Küresel Askeri Tarih*. Translated by Oğuzhan Dursun. Istanbul: Yeditepe Yayınevi.
- Bremer, Stuart A. 1992. "Dangerous Dyads: Conditions Affecting the Likelihood of Interstate War, 1816–1965." *Journal of Conflict Resolution* 36 (2): 309–41.
- Bruun, Geoffrey. 1965. "The Balance of Power During the Wars, 1793–1814." In *The New Cambridge Modern History: Volume 9: War and Peace in an Age of Upheaval, 1793–1830*, edited by C. W. Crawley, 250–74. Cambridge: Cambridge University Press.
- Cashman, Greg. 2014. *What Causes War? An Introduction to Theories of International Conflict*. Lanham, MD: Rowman & Littlefield.
- Cashman, Greg, and Leonard C. Robinson. 2007. *An Introduction to the Causes of War: Patterns of Interstate Conflict from World War I to Iraq*. Lanham, Md: Rowman & Littlefield Publishers.
- Chadefaux, Thomas. 2020. "What the Enemy Knows: Common Knowledge and the Rationality of War." *British Journal of Political Science* 50 (4): 1593–1607.

- Chiba, Daina, Carla Martinez Machain, and William Reed. 2014. "Major Powers and Militarized Conflict." *Journal of Conflict Resolution* 58 (6): 976–1002.
- Colgan, Jeff D. 2013. "Fueling the Fire: Pathways from Oil to War." *International Security* 38 (2): 147–80.
- Cox, Michaelene. 2008. "The Razor's Edge: A Review of Contiguity in Conflict Studies and an Argument for Redefining Neighbors." *International Journal of Social Inquiry* 1 (2).
- Crawford, Neta C. 2021. "Democracy and the Preparation and Conduct of War." *Ethics & International Affairs* 35 (3): 353–65.
- Croco, Sarah E., and Tze Kwang Teo. 2005. "Assessing the Dyadic Approach to Interstate Conflict Processes: A.k.a. 'Dangerous' Dyad-Years." *Conflict Management and Peace Science* 22 (1): 5–18.
- Danilovic, Vesna. 2002. *When the Stakes Are High: Deterrence and Conflict among Major Powers*. University of Michigan Press.
- Diehl, Paul F., and Thorin M. Wright. 2016. "A Conditional Defense of the Dyadic Approach." *International Studies Quarterly* 60 (2): 363–68.
- Doyle, Michael W. 1986. "Liberalism and World Politics." *American Political Science Review* 80 (4): 1151–69.
- Fearon, James D. 1995. "Rationalist Explanations for War." *International Organization* 49 (3): 379–414.
- Garnham, David. 1976a. "Dyadic International War 1816-1965: The Role of Power Parity and Geographical Proximity." *Western Political Quarterly* 29 (2): 231–42.
- . 1976b. "Power Parity and Lethal International Violence, 1969–1973." *Journal of Conflict Resolution* 20 (3): 379–94.
- Geller, Daniel S. 2000. "Status Quo Orientation, Capabilities, and Patterns of War Initiation in Dyadic Rivalries." *Conflict Management and Peace Science* 18 (1): 73–96.
- Gibler, Douglas M. 2017. "State Development, Parity, and International Conflict." *The American Political Science Review* 111 (1): 21–38.
- Gilpin, Robert. 1981. *War and Change in World Politics*. Cambridge: Cambridge University Press.
- Gochman, Charles S. 1990. *The Geography of Conflict: Militarized Interstate Disputes Since 1816*. WZB, Forschungsgruppe Internat. Beziehungen.

- Gowa, Joanne. 2011. "The Democratic Peace After the Cold War." *Economics & Politics* 23 (2): 153–71.
- Guzzini, Stefano. "On the Measure of Power and the Power of Measure in International Relations". Danish Institute for International Studies, 2009
- Hegre, Havard. 2000. "Development and the Liberal Peace: What Does It Take to Be a Trading State?" *Journal of Peace Research* 37 (1): 5–30.
- Hensel, Paul R. 2002. "The More Things Change...: Recognizing and Responding to Trends in Armed Conflict." *Conflict Management and Peace Science* 19 (1): 27–52.
- Hopf, Ted. 1991. "Polarity, the Offense-Defense Balance, and War." *American Political Science Review* 85 (2): 475–93.
- Huntington, Samuel P. 1991. "Democracy's Third Wave." *Journal of Democracy* 2 (2): 12–34.
- Kaplan, Morton A. 1959. "Man, the State, and War: A Theoretical Analysis. By Kenneth N. Waltz. (New York: Columbia University Press. 1959)" *American Political Science Review* 53 (4): 1125–27.
- Kaplow, Jeffrey M, and Erik Gartzke. 2015. "Knowing Unknowns." In *Knowing Unknowns: The Effect of Uncertainty in Interstate Conflict*.
- Kenwick, Michael R., and John A. Vasquez. 2017. "Defense Pacts and Deterrence: Caveat Emptor." *The Journal of Politics* 79 (1): 329–34.
- Kim, Woosang. 1989. "Power, Alliance, and Major Wars, 1816-1975." *The Journal of Conflict Resolution* 33 (2): 255–73.
- King, Gary. 1989. "Event Count Models for International Relations: Generalizations and Applications." *International Studies Quarterly* 33 (2): 123–47.
- . 1998. *Unifying Political Methodology: The Likelihood Theory of Statistical Inference*. Reprint edition. Ann Arbor: University of Michigan Press.
- King, Gary, and Langche Zeng. 2001. "Explaining Rare Events in International Relations." *International Organization* 55 (3): 693–715.
- Lee Ray, James. 2005. "Constructing Multivariate Analyses (of Dangerous Dyads)." *Conflict Management and Peace Science* 22 (4): 277–92.
- Leeds, Brett Ashley. 2005. "Alliances and the Expansion and Escalation of Militarized Interstate Disputes." In *New Directions for International Relations: Confronting the Method-of-Analysis Problem*, edited by Alex Mintz and Bruce Russett, 117–34. Lanham: Lexington Books

- Leeds, Brett Ashley, and Michaela Mattes. 2007. "Alliance Politics during the Cold War: Aberration, New World Order, or Continuation of History?" *Conflict Management and Peace Science* 24 (3): 183–99.
- Lemke, Douglas. 1995. "Toward A General Understanding of Parity and War." *Conflict Management and Peace Science* 14 (2): 143–62.
- . 1996. "Small States and War: An Expansion of Power Transition Theory." In *Parity and War: Evaluations and Extensions of The War Ledger*, edited by Jacek Kugler and Douglas Lemke, 77–91. Ann Arbor, MI: University of Michigan Press
- Levy, Jack S. 1983. *War in the Modern Great Power System: 1495--1975*. University Press of Kentucky.
- . 1985. "Theories of General War." *World Politics* 37 (3): 344–74.
- . 1996. "Loss Aversion, Framing, and Bargaining: The Implications of Prospect Theory for International Conflict." *International Political Science Review* 17 (2): 179–95.
- . 2013a. "Interstate War and Peace." In *Handbook of International Relations*, edited by Walter Carlsnaes, Thomas Risse and Beth A. Simmons, 581–606. London: SAGE Publications Ltd.
- . 2013b. "Psychology and Foreign Policy Decision-Making." In *The Oxford Handbook of Political Psychology*, edited by Leonie Huddy, David O. Sears, and Jack S. Levy, 300–333. New York: Oxford University Press.
- Levy, Jack S., and William R. Thompson. 2010. *Causes of War*. 1st edition. Chichester, West Sussex, U.K. ; Malden, MA: Wiley-Blackwell.
- Mansfield, Edward D., and Jack Snyder. 1995. "Democratization and the Danger of War." *International Security* 20 (1): 5–38.
- Manus, Midlarsky. 2011. *Handbook of War Studies*. 1st edition. Milton Park: Routledge.
- Maoz, Zeev, and Nasrin Abdolali. 1989. "Regime Types and International Conflict, 1816-1976." *Journal of Conflict Resolution* 33 (1): 3–35.
- Maoz, Zeev, and Bruce Russett. 1992. "Alliance, Contiguity, Wealth, and Political Stability: Is the Lack of Conflict among Democracies a Statistical Artifact?" *International Interactions* 17 (3): 245–67.
- . 1993. "Normative and Structural Causes of Democratic Peace, 1946–1986." *American Political Science Review* 87 (3): 624–38.
- McMillan, Susan M. 1997. "Interdependence and Conflict." *Mershon International Studies Review* 41 (1): 33.

- Mearsheimer, John J. 2014. *The Tragedy of Great Power Politics*. Updated edition. New York: W. W. Norton & Company.
- Mesquita, Bruce Bueno de. 1975. "Measuring Systemic Polarity." *The Journal of Conflict Resolution* 19 (2): 187–216.
- . 1978. "Systemic Polarization and the Occurrence and Duration of War." *Journal of Conflict Resolution* 22 (2): 241–67.
- . 1985. "The War Trap Revisited: A Revised Expected Utility Model." *American Political Science Review* 79 (1): 156–77.
- Mesquita, Bruce Bueno de, and David Lalman. 1992. *War and Reason: Domestic and International Imperatives*. Yale University Press.
- Mesquita, Bruce Bueno de, Randolph M. Siverson, and Gary Woller. 1992. "War and the Fate of Regimes: A Comparative Analysis." *American Political Science Review* 86 (3): 638–46.
- Minhas, Shahryar, Cassy Dorff, Max B. Gallop, Margaret Foster, Howard Liu, Juan Tellez, and Michael D. Ward. 2022. "Taking Dyads Seriously." *Political Science Research and Methods* 10 (4): 703–21.
- Morgan, T. Clifton, and Sally Howard Campbell. 1991. "Domestic Structure, Decisional Constraints, and War: So Why Kant Democracies Fight?" *The Journal of Conflict Resolution* 35 (2): 187–211.
- O'Dell, Wesley B. 2019. "Great Power Leadership." In *Oxford Research Encyclopedia of International Studies*, edited by Nukhet Sandal. London: Oxford University Press.
- Offner, John. 1998. "Why Did the United States Fight Spain in 1898?" *OAH Magazine of History* 12 (3): 19–23.
- Organski, A. F. K., and Jacek Kugler. 1981. *The War Ledger*. Chicago, IL: University of Chicago Press.
- Phillips, Charles, and Alan Axelrod. 2005. "Opium War, First." In *Encyclopedia of Wars - 3 Volume Set*, 837. New York: Facts on File.
- Pietrzyk, Mark E. 2002. *International Order and Individual Liberty: Effects of War and Peace on the Development of Governments*. Lanham, Md.: University Press of America.
- Poast, Paul. 2016. "Dyads Are Dead, Long Live Dyads! The Limits of Dyadic Designs in International Relations Research." *International Studies Quarterly* 60 (2): 369–74.

- Reed, William, David H. Clark, Timothy Nordstrom, and Wonjae Hwang. 2008. "War, Power, and Bargaining." *The Journal of Politics* 70 (4): 1203–16.
- Rosato, Sebastian. 2003a. "The Flawed Logic of Democratic Peace Theory." *American Political Science Review* 97 (4): 585–602.
- Sample, Susan G. 2002. "The Outcomes of Military Buildups: Minor States vs. Major Powers." *Journal of Peace Research* 39 (6): 669–91.
- Sarkees, Meredith Reid, and Frank Wayman. 2010. *Resort to War: 1816 - 2007. 1st edition*. Washington, D.C: CQ Press.
- Sarkees, Meredith Reid, Frank Whelon Wayman, and J. David Singer. 2003. "Inter-State, Intra-State, and Extra-State Wars: A Comprehensive Look at Their Distribution over Time, 1816–1997." *International Studies Quarterly* 47 (1): 49–70.
- Senese, Paul D., and John A. Vasquez. 2005. "Assessing the Steps to War." *British Journal of Political Science* 35 (4): 607–33.
- . 2008. *The Steps to War: An Empirical Study*. Princeton: Princeton University Press.
- Sheehan, Michael. 1995. *Balance of Power: History and Theory*. New York: Routledge.
- Snyder, Jack. 1991. *Myths of Empire: Domestic Politics and International Ambition*. Ithaca, NY: Cornell University Press.
- Souva, Mark. 2004. "Institutional Similarity and Interstate Conflict." *International Interactions* 30 (3): 263–80.
- Stuckey, J. David Singer, Stuart A. Bremer, John. 2012. "Capability Distribution, Uncertainty, and Major Power War, 1820–1965." In *Advancing Peace Research*, edited by David J. Singer, Jody B. Lear, Diane Macaulay, Meredith Reid Sarkees, 161-174. Milton Park: Routledge.
- Valeriano, B. 2013. *Becoming Rivals: The Process of Interstate Rivalry Development*. In *What Do We Know About War? 2nd Edition*, edited by John A. Vasquez, 63-82. Lanham, MD: Rowman and Littlefield Publishers.
- Vasquez, John A. 1996. "Distinguishing Rivals That Go to War from Those That Do Not: A Quantitative Comparative Case Study of the Two Paths to War." *International Studies Quarterly* 40 (4): 531–58.
- . 2004. "The Probability of War, 1816-1992." *International Studies Quarterly* 48 (1): 1–27.

- Vasquez, John, and Marie T. Henehan. 2001. "Territorial Disputes and the Probability of War, 1816-1992." *Journal of Peace Research* 38 (2): 123–38.
- Viotti, Paul R., and Mark V. Kauppi. 2011. *International Relations Theory*. 5th edition. Boston: Pearson.
- Wagner, R. Harrison. 1994. "Peace, War, and the Balance of Power." *The American Political Science Review* 88 (3): 593–607.
- Wallerstein, Immanuel. 2004. "The Modern World-System as a Capitalist World-Economy: Production, Surplus Value, and Polarization." In *World-Systems Analysis*, 23-41. Durham: Duke University Press
- Wayman, Frank Whelon. 1984. "Bipolarity and War: The Role of Capability Concentration and Alliance Patterns among Major Powers, 1816-1965." *Journal of Peace Research* 21 (1): 61–78.
- Weitsman, Patricia A. 2010. "Alliances and War." In *Oxford Research Encyclopedia of International Studies*, edited by Nukhet Sandal, London: Oxford University Press
- Welch, David A., and Joseph Nye. 2015. *Understanding Global Conflict and Cooperation: An Introduction to Theory and History*. Harlow: Pearson Education Ltd
- Wright, James D. 2015. *International Encyclopedia of the Social & Behavioral Sciences*. Amsterdam: Elsevier.
- Zanden, Jan Luiten van, Joerg Baten, Peter Foldvari, and Bas van Leeuwen. 2014. "The Changing Shape of Global Inequality 1820–2000; Exploring a New Dataset." *Review of Income and Wealth* 60 (2): 279–97.

APPENDIX A

Final Data

DyadType	ProxL	RelpowL	PowerL	AlliL	NodemL	DevL	Mill	No War	War	TotalDyadYear	Lndyadyear
1	0	0	0	0	0	0	0	64411	0	64411	11.0730397049599
2	1	0	0	0	0	0	0	876	2	878	6.77764659363512
3	0	1	0	0	0	0	0	107849	4	107853	11.5885244678421
4	1	1	0	0	0	0	0	2134	11	2145	7.67089483136212
5	0	0	1	0	0	0	0	18067	6	18073	9.80217439083564
6	1	0	1	0	0	0	0	700	1	701	6.55250788703459
7	0	1	1	0	0	0	0	4174	8	4182	8.33854487998858
8	1	1	1	0	0	0	0	208	3	211	5.35185813347607
9	0	0	0	1	0	0	0	1934	0	1934	7.56734567601324
10	1	0	0	1	0	0	0	285	0	285	5.65248918026865
11	0	1	0	1	0	0	0	4281	0	4281	8.36194190614495
12	1	1	0	1	0	0	0	823	0	823	6.71295620067707
13	0	0	1	1	0	0	0	1393	0	1393	7.23921497377981
14	1	0	1	1	0	0	0	87	0	87	4.46590811865458
15	0	1	1	1	0	0	0	351	0	351	5.86078622346587
16	1	1	1	1	0	0	0	60	1	61	4.11087386417331
17	0	0	0	0	1	0	0	44762	1	44763	10.7091371843085
18	1	0	0	0	1	0	0	827	0	827	6.71780469502369
19	0	1	0	0	1	0	0	88062	3	88065	11.3858304571664
20	1	1	0	0	1	0	0	3299	13	3312	8.10530751550515
21	0	0	1	0	1	0	0	9475	1	9476	9.15651756527868
22	1	0	1	0	1	0	0	682	2	684	6.52795791762255
23	0	1	1	0	1	0	0	1605	0	1605	7.38087903556412
24	1	1	1	0	1	0	0	374	5	379	5.93753620508243
25	0	0	0	1	1	0	0	2695	0	2695	7.8991534833431
26	1	0	0	1	1	0	0	409	0	409	6.0137151560428
27	0	1	0	1	1	0	0	12418	1	12419	9.42698283694803
28	1	1	0	1	1	0	0	2303	3	2306	7.743269700829
29	0	0	1	1	1	0	0	161	0	161	5.08140436498446
30	1	0	1	1	1	0	0	193	0	193	5.26269018890489
31	0	1	1	1	1	0	0	57	0	57	4.04305126783455
32	1	1	1	1	1	0	0	107	1	108	4.68213122712422
33	0	0	0	0	0	1	0	2373	0	2373	7.77191025643576
34	1	0	0	0	0	1	0	85	0	85	4.44265125649032
35	0	1	0	0	0	1	0	5419	0	5419	8.59766657556611
36	1	1	0	0	0	1	0	337	0	337	5.82008293035236
37	0	0	1	0	0	1	0	1150	0	1150	7.0475172213573
38	1	0	1	0	0	1	0	221	0	221	5.39816270151775
39	0	1	1	0	0	1	0	1090	0	1090	6.99393297522319
40	1	1	1	0	0	1	0	261	0	261	5.56452040732269
41	0	0	0	1	0	1	0	293	0	293	5.68017260901707
42	1	0	0	1	0	1	0	21	0	21	3.04452243772342
43	0	1	0	1	0	1	0	281	0	281	5.63835466933375
44	1	1	0	1	0	1	0	38	0	38	3.63758615972639
45	0	0	1	1	0	1	0	252	0	252	5.52942908751142
46	1	0	1	1	0	1	0	36	0	36	3.58351893845611
47	0	1	1	1	0	1	0	187	0	187	5.23110861685459
48	1	1	1	1	0	1	0	109	0	109	4.69134788222914
49	0	0	0	0	1	1	0	83	0	83	4.4188406077966
50	0	1	0	0	1	1	0	159	0	159	5.06890420222023
51	1	1	0	0	1	1	0	30	0	30	3.40119738166216
52	0	0	1	0	1	1	0	44	0	44	3.78418963391826
53	1	0	1	0	1	1	0	23	0	23	3.13549421592915
54	0	1	1	0	1	1	0	22	0	22	3.09104245335832
55	1	1	1	0	1	1	0	86	0	86	4.45434729625351
56	0	1	0	1	1	1	0	42	0	42	3.73766961828337
57	1	1	0	1	1	1	0	40	0	40	3.68887945411394
58	0	0	1	1	1	1	0	14	0	14	2.63905732961526
59	1	0	1	1	1	1	0	19	0	19	2.94443897916644
60	0	1	1	1	1	1	0	14	0	14	2.63905732961526
61	1	1	1	1	1	1	0	27	1	28	3.3322045101752
62	0	0	0	0	0	0	1	5306	1	5307	8.57678198282789
63	1	0	0	0	0	0	1	209	1	210	5.34710753071747
64	0	1	0	0	0	0	1	11882	0	11882	9.38277992891569
65	1	1	0	0	0	0	1	560	8	568	6.34212141872115
66	0	0	1	0	0	0	1	4840	1	4841	8.4848765899397
67	1	0	1	0	0	0	1	472	1	473	6.15909538849193
68	0	1	1	0	0	0	1	1267	0	1267	7.14440718032114
69	1	1	1	0	0	0	1	608	0	608	6.41017488196617
70	0	0	0	1	0	0	1	251	0	251	5.52545293913178
71	1	0	0	1	0	0	1	49	0	49	3.89182029811063
72	0	1	0	1	0	0	1	528	1	529	6.2709884318583
73	1	1	0	1	0	0	1	99	1	100	4.60517018598809
74	0	0	1	1	0	0	1	272	0	272	5.605802066296
75	1	0	1	1	0	0	1	248	1	249	5.51745289646471
76	0	1	1	1	0	0	1	242	0	242	5.48893772615669
77	1	1	1	1	0	0	1	660	0	660	6.49223983502047
78	0	0	0	0	1	0	1	7488	1	7489	8.92119055624937

79	1	0	0	0	1	0	1	393	2	395	5.97888576490112
80	0	1	0	0	1	0	1	12331	0	12331	9.41987169587053
81	1	1	0	0	1	0	1	745	4	749	6.61873898351722
82	0	0	1	0	1	0	1	4020	1	4021	8.29928590689727
83	1	0	1	0	1	0	1	610	3	613	6.41836493593621
84	0	1	1	0	1	0	1	863	1	864	6.76157276880406
85	1	1	1	0	1	0	1	1039	5	1044	6.95081476844258
86	0	0	0	1	1	0	1	113	0	113	4.72738781871234
87	1	0	0	1	1	0	1	26	0	26	3.25809653802148
88	0	1	0	1	1	0	1	382	0	382	5.94542060860658
89	1	1	0	1	1	0	1	372	1	373	5.92157841964382
90	0	0	1	1	1	0	1	132	0	132	4.88280192258637
91	1	0	1	1	1	0	1	508	1	509	6.23244801655052
92	0	1	1	1	1	0	1	123	0	123	4.81218435537242
93	1	1	1	1	1	0	1	892	5	897	6.7990558620588
94	0	0	0	0	0	1	1	1326	0	1326	7.18992217074581
95	1	0	0	0	0	1	1	244	0	244	5.4971682252932
96	0	1	0	0	0	1	1	3680	0	3680	8.21066803116298
97	1	1	0	0	0	1	1	471	0	471	6.15485809401642
98	0	0	1	0	0	1	1	1800	0	1800	7.49554194388426
99	1	0	1	0	0	1	1	337	0	337	5.82008293035236
100	0	1	1	0	0	1	1	1158	0	1158	7.05444965813294
101	1	1	1	0	0	1	1	886	0	886	6.78671695060508
102	0	0	0	1	0	1	1	284	0	284	5.64897423816121
103	1	0	0	1	0	1	1	174	0	174	5.15905529921453
104	0	1	0	1	0	1	1	400	0	400	5.99146454710798
105	1	1	0	1	0	1	1	247	0	247	5.50938833662798
106	0	0	1	1	0	1	1	264	0	264	5.57594910314632
107	1	0	1	1	0	1	1	177	0	177	5.17614973257383
108	0	1	1	1	0	1	1	261	0	261	5.56452040732269
109	1	1	1	1	0	1	1	644	0	644	6.46769872610435
110	0	0	0	0	1	1	1	1392	3	1395	7.24064969425547
111	1	0	0	0	1	1	1	24	0	24	3.17805383034795
112	0	1	0	0	1	1	1	1070	1	1071	6.97634807044775
113	1	1	0	0	1	1	1	137	0	137	4.91998092582813
114	0	0	1	0	1	1	1	1059	0	1059	6.96508034560141
115	1	0	1	0	1	1	1	157	0	157	5.05624580534831
116	0	1	1	0	1	1	1	155	0	155	5.04342511691925
117	1	1	1	0	1	1	1	416	2	418	6.03548143252476
118	0	0	0	1	1	1	1	40	0	40	3.68887945411394
119	1	0	0	1	1	1	1	60	0	60	4.0943445622221
120	0	1	0	1	1	1	1	198	0	198	5.28826703069454
121	1	1	0	1	1	1	1	153	0	153	5.03043792139244
122	0	0	1	1	1	1	1	83	0	83	4.4188406077966
123	1	0	1	1	1	1	1	227	2	229	5.43372200355424
124	0	1	1	1	1	1	1	17	0	17	2.83321334405622
125	1	1	1	1	1	1	1	384	0	384	5.95064255258773

CURRICULUM VITAE

Personal Information

Name Surname : Emre Kaya

Education Information

Bachelor's degree : Bogazici University, Economics (2016)

Foreign Languages : English, German (Intermediate)

