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THE SYSTEMIC DEMOCRATIC PEACE

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ABSTRACT

THE SYSTEMIC DEMOCRATIC PEACE

By

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In this study, I develop a systemic level theory of the relationship between democracy and war based on Kant's writings on perpetual peace. I argue that the relationship between the proportion of democracies in the international system and the proportion of nations fighting interstate wars is both endogenous and evolutionary. War creates conditions that favor the development of democracies and a rule of law among nations because the experience of warfare improves the internal institutions of states over time and because democracies are more likely to win the wars they fight, allowing them to promote democracy in the aftermath of war. Peaceful relations between democracies creates greater peace and furthers the spread of democracy and democratic norms in the international system. The relationship between democracy and war at the systemic level is also evolutionary; the pacific impact of democracy on war increases over time as the system moves closer to Kant's federation of free states. In addition, I assert that while war acts as a force for the development of democracy, its substantive impact will decline over time as the democratic rule of law expands internationally and as the frequency of war declines over time. I also examine the impact of three exogenous variables on war and democracy at the systemic level: major power capability concentration, systemic trade, and world production. I argue that increases in concentration and global trade make war in the system less likely, whereas increases in

world production are positively related to the growth in the proportion of democracies. I test these theoretical propositions with time series data from 1816-1988. I utilize two estimation techniques: 1) Full Information Maximum Likelihood estimation of two simultaneous equations models, and 2) Sliding window estimation, where I split the sample into 30, 40 and 50-year overlapping sub-samples. The latter technique is employed to examine the evolutionary relationship between democracy and war in the international system.

My empirical analysis demonstrates that the systemic level relationship between the proportion of democracies and the proportion of nations fighting interstate wars is indeed endogenous, with democracy having a significant and negative impact on war; war also has a significant and positive effect on the proportion of democracies. This empirical finding of a positive relationship between war and democracy contradicts many other studies in the democratic peace literature that posit a negative relationship between these variables. Also, the largest wars in the sample time period produce the greatest structural breaks in the models. For example, sliding window estimation of the impact of democracy on war reveals that the relationship does not become statistically significant until World War I, and the degree of the pacific impact of democracy becomes strongest in the post-World War II era, as I predicted theoretically. I also find empirical support for the power preponderance hypothesis, i.e., as the concentration of power in the international system increases, the proportion of nations fighting war decreases. Finally, the results do suggest that systemic trade is negatively related to systemic conflict, while world production has little or no effect on trends in global democracy.

For my mother

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INTRODUCTION

> The Cold War has ended, and we now have a chance to forge a democratic peace, an enduring peace built on shared values—democracy and political and economic freedom. The strength of these values in Russia and the other new independent states will be the surest foundation for peace—and the strongest guarantee of our national security—for decades to come.
>
> Secretary of State James Baker, February 5, 1992[1]

> The twentieth century saw the developed world descend into a paroxysm of ideological violence, as liberalism contended first with the remnants of absolutism, then bolshevism and fascism, and finally an updated Marxism that threatened to lead to the ultimate apocalypse of nuclear war. But the century that began full of self-confidence in the ultimate triumph of Western liberal democracy seems at its close to be returning full circle to where it started: not to an 'end of ideology' or a convergence between capitalism and socialism, as earlier predicted, but to an unabashed victory of economic and political liberalism (Fukuyama, 1989:3).

The quotes above highlight one of the most striking changes in the international system in the last two centuries, the tremendous growth of democracy in the world. The number of democracies expanded from one in 1816 to 76 in 1992, and the proportion of democracies increased substantially from 4% in 1816 to 42% in 1992.[2] Today democracies

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[1] This quote is taken from Russett (1993:128-9).

[2] These figures are calculated with data from the Polity III data set (Jaggers and Gurr, 1995). I count as a democracy any nation who scores six or higher on the Polity III democracy scale (ranging from 0-10). The Polity III ordinal democracy measure combines information from several institutional characteristics of a polity: the competitiveness of political participation, the level of executive constraints, and the openness and competitiveness of chief executive recruitment. (Jaggers and Gurr, 1995:471) I also utilize

constitute a majority of nations in the international system (Gleditsch and Hegre, 1997:304-5). The potential impact of the spread of democracy on international relations between nations is profound. Many scholars and policy makers believe that the end of the Cold War, coupled with the spread of democracy and liberalism, signals a new era of international relations.

Perhaps the most significant consequence of the spread of democracy is the potential for peace in the international system. "To the degree that countries once ruled by autocratic systems become democratic, a striking fact about the world comes to bear on any discussion of the future of international relations: in the modern international system, democracies have almost never fought each other (Russett, 1993:4)." This notion of a democratic peace finds support in a plethora of empirical studies in international relations. Not only do democracies not fight wars against each other, they are also less likely to engage in militarized disputes amongst themselves, and they are less likely to escalate militarized disputes between themselves to war. In fact, peace between democracies has been called "the closest thing we have to an empirical law in international relations (Levy, 1988:662)" and "one of the strongest nontrivial or nontautological generalizations that can be made about international relations (Russett, 1990:123)."

Given the incredible growth in the number of democracies in the international system and the overwhelming peace between democracies, one may posit that the very nature of international relations will be transformed. Ray (1995:201) ponders this possibility:

Doyle's (1986) measure of democracy, which is based largely on Kant's conceptualization of a republican government. See Chapter 3 for a more detailed description of these measures.

> If relationships among democratic states are fundamentally different from those among combinations of democratic and undemocratic states, as well as those among uniformly undemocratic states, then a significant trend towards democracy, even if it is restricted to the most powerful states in the international system, could transform international politics.

Chan (1997:59) also argues that the increasing trend in global democracy could alter the nature of international interactions between states.

> Democracies constitute for the first time in history a majority of the states in the international system. Therefore, the norms governing *their* relations have a better chance now than earlier to become the dominant mode of interaction in world politics.

Ideas about the possible extension of the democratic peace to the international system as a whole, stand in stark contrast to the views of neorealism, an influential theoretical approach in international relations research in the last few decades.[3] Neorealists assert that the defining characteristic of the international system is anarchy, and that the distribution of power in the international system is a major determinant of the level of systemic conflict. The relationships between states have been and will continue to be characterized by anarchy, the pursuit of power, and the security dilemma. Contrary to advocates of the democratic peace proposition, neorealists argue that the domestic structure of states in the international system has little or no effect on outcomes in world politics. In addition, neorealists present a theoretical picture of the international system that is enduring and unlikely to change in the future.

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[3] I am interested in primarily the systemic level arguments stemming from the realist tradition, thus I choose to focus on Waltz's (1979) rendition of neorealism and subsequent research in the spirit of Waltz.

The primary goal of this thesis is to address the debate between advocates of the democratic peace and defenders of the neorealist tradition,[4] focusing on the systemic level consequences of the long term growth in democracy, the outcomes of wars in the international system, and peaceful relations between democracies. In particular, I address the following questions: 1) What is the *systemic level* relationship between democracy and war, and how is this relationship *evolving* over time? 2) Are the traditional *rules* and *norms* of the international system described by neorealists being transformed as the international system becomes more democratic? 3) How do economic relations between states in the system influence the systemic level relationship between democracy and war over time? and 4) How is the level of war in the international system related to the concentration of power between nation-states, and how is this relationship changing over time?

I argue that the best way to answer these questions is to develop a *systemic level* theory of the relationship between democracy and war. In Chapter 1, I review previous work on the relationship between regime type and war at three levels of analysis (monadic, dyadic, and systemic). Scholars have a tendency to view the systemic level relationship between democracy and war as a puzzle that emerges from the somewhat contradictory findings at the monadic and dyadic levels of analysis: 1) democracies do not fight wars against each other (dyadic result), but 2) democracies participate in as many wars overall as nondemocracies (monadic result). The systemic level relationship between democracy and war is often deduced from empirical findings at other levels of analysis. The evolving,

[4] Several scholars have explicitly criticized the democratic peace proposition from a realist perspective (e.g. Mearsheimer, 1990; Layne, 1994; Spiro, 1994; Farber and Gowa, 1995).

theoretical *systemic* relationship between democracy and war is an extremely interesting topic, but it has been given rather short shrift in the current democratic peace literature.

In Chapter 2, I address this void in the literature by developing a systemic theory of the relationship between democracy, war, trade, production, and power concentration. My systemic theoretical model contributes to our understanding of the democratic peace proposition in several ways. First, I argue that democracy and war are *endogenously* related to each other over time. War creates conditions that favor the development of democracy and a pacific rule of law among nations, while peaceful relations between democracies creates greater peace and furthers the spread of democracy and democratic norms in the international system. A vast majority of studies on the democratic peace study only the impact of democracy on war, without considering how war affects the development of democracy.

Second, I model the relationship between democracy and war *dynamically*, going beyond the tendency in international relations research to assume that a single model explains the relationship between variables of interest over time. My theoretical model predicts that the pacifying (and negative) impact of democracy on war in the international system will become stronger over time. I also expect the positive impact of war on democracy to get weaker over time as the number of democracies in the system increases. The third primary contribution of my theoretical approach is the added emphasis on rules and norms of behavior in the international system, particularly how these are evolving as a consequence of the dynamic relationship between democracy and war.

Finally, the theory is developed at the systemic level, going beyond previous tendencies to aggregate empirical findings from the monadic and dyadic levels of analysis to the systemic level. I argue that the empirical results on the democratic peace proposition at

the monadic level are questionable, and that a theory developed at the systemic level avoids the problems of aggregating potentially faulty findings across levels.

In Chapter 3, I introduce data collected from 1816-1988 that is utilized to test the theoretical propositions delineated in Chapter 2. In addition to presenting the basic time series plots for each data series, I also run diagnostic tests for stationarity to determine what transformations (if any) are needed to ensure that each series is characterized by a constant mean and variance over time.

In Chapter 4, I test the systemic democratic peace theory with two simultaneous equation empirical models that are estimated for the entire time period. Both models provide support for my theoretical propositions, although the parameters for both models are not structurally stable, i.e., they vary over time. To determine how the substantive relationships between my variables are changing over time, I present the results of sliding window analysis in Chapter 5 where the data is divided into 30, 40, and 50-year overlapping samples. I find that the impact of democracy on war in the international system has grown stronger over time, supporting my theoretical argument that democratic rules and norms of interaction are diffusing throughout the international system over time. I also find that war has a positive impact on democracy, and that this relationship is getting somewhat weaker over time. I conclude in Chapter 6 with a summary of the major findings in this thesis and I discuss several avenues for future research and extensions.

CHAPTER 1

THE DEMOCRATIC PEACE

In this chapter, I review previous research on the democratic peace at three main levels of analysis: the monadic level, the dyadic level, and the systemic level. Some scholars assert that peace between democracies translates into greater peace in the international system as the number of democracies increases. Others regard the systemic level relationship between democracy and war as a puzzle that emerges from two significant empirical findings at the monadic and dyadic levels: 1) democracies do not fight wars against each other (dyadic result), but 2) democracies are just as war-prone in general as nondemocracies (monadic result). While the results obtained at the systemic level through aggregation across levels of analysis are interesting, they are limited theoretically. I argue that our understanding of the evolving relationship between democracy and war in the international system has been hampered by the lack of theorizing at the systemic level, and I conclude the chapter with a discussion of why a systemic level theory of the democratic peace is needed.

Three Levels of Analysis

One useful way of understanding international relations is to distinguish between levels of analysis. Singer's (1961) classic discussion of two levels of analysis, the international system and the nation state, along with Waltz's (1959) three images (man, the nation state, and the state system), have provided international relations scholars with a strong tradition of conceptualizing theoretical questions in terms of the level of analysis adopted. Organizing studies of the democratic peace along these analytical lines has proven to be just as fruitful.

Research on the relationship between regime type and international conflict has typically been conducted at one of three primary levels of analysis: 1) the monadic or nation-state level, 2) the dyadic or relational level, and 3) the systemic level. Monadic level research of the democratic peace proposition examines the relationship between a state's regime type and its foreign policy behavior, asking the question "do democracies more frequently maintain peace overall? (Gleditsch and Hegre, 1997:283)." Dyadic level research examines the interactions between pairs of states, posing the question "do democracies usually keep the peace among themselves? (Gleditsch and Hegre, 1997:283)." Finally, systemic level research of the relationship between global democracy and systemic conflict focuses on the following question: "is an international system with a high proportion of democratic states more peaceful? (Gleditsch and Hegre, 1997:283)"

Tables 1-3 provide a brief summary of the research on the democratic peace proposition at each of these three levels of analysis.[5] I briefly review the most significant

[5] The tables and figures in this study are presented at the end of each chapter. It is not my intention to provide a comprehensive survey of the democratic peace literature in this chapter. I focus instead on the

theoretical approaches and empirical findings at each level of analysis in the next three sections. This is followed by a comparison of theoretical aggregation across levels of analysis, versus the development of a theoretical model of the democratic peace at the systemic level.

The Dyadic Democratic Peace

The strongest evidence for peace between democracies stems from the dyadic level research, i.e., the finding that democracies do not fight each other (Babst, 1964; Rummel, 1983; Chan, 1984; Weede, 1984; Maoz and Abdolali, 1989; Bremer, 1992; Bueno de Mesquita and Lalman, 1992; Maoz and Russett, 1992; Morgan and Schwebach, 1992; Weede, 1992; Bremer, 1993; Maoz and Russett, 1993; Russett, 1993; Rousseau, et al 1996; Oneal, et al 1996; Gleditsch and Hegre, 1997; Oneal and Russett, 1997; Raknerud and Hegre, 1997). Studies in this tradition typically focus on the relationship between joint regime type and three aspects of conflict: 1) the outbreak of dyadic militarized interstate disputes,[6] 2) the escalation of dyadic militarized interstate disputes to war,[7] and 3) the outbreak of interstate

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empirical work most relevant to my research question, the relationship between regime type and international conflict (including interstate wars and militarized disputes). Some of the important research excluded from Table 1 includes the work on democratization and war (Mansfield and Snyder, 1995; Enterline, 1996; Thompson and Tucker, 1997), democracy and internal conflict (e.g. Rummel, 1984; Gelpi, 1997), regime type and foreign policy behavior (Haas, 1965; Rosenau, 1966; East and Gregg, 1967; Rummel, 1968; Salmore and Hermann, 1969; Zinnes and Wilkenfeld, 1971; East and Hermann, 1974), democracy and foreign intervention (Kegley and Hermann, 1995; Hermann and Kegley, 1996), democracy and international crisis (Hewitt and Wilkenfeld, 1996), and democracy and alliances (Siverson and Emmons, 1991; Farber and Gowa, 1995; Gaubatz, 1996; Simon and Gartzke, 1996), among others. More comprehensive surveys of the democratic peace literature are contained in Ray (1995) and Chan (1997).

[6] Gochman and Maoz (1984:586) define a militarized interstate dispute as "a set of interactions between or among states involving threats to use military force, displays of military force, or actual uses of force. To be included, these acts must be explicit, overt, nonaccidental, and government sanctioned." I frequently adopt the acronym MID in this study as a short hand for militarized interstate dispute (referring to the data collected by the Correlates of War project).

[7] The most common data set on war analyzed in the democratic peace literature is the Correlates of War

wars. Research at the dyadic level demonstrates that democracies are less likely to fight militarized disputes amongst themselves, democracies are less likely to escalate disputes to wars, and that interstate war between democracies is rare or nonexistent.[8]

In his fourth volume of *Understanding War and Conflict* (1979), Rummel developed one of the first and most influential theoretical models of the democratic peace. His well known "Joint-freedom proposition" (Rummel, 1983:29), posited that "Libertarian systems mutually preclude violence (violence will occur between states only if at least one is nonlibertarian; Rummel, 1979:277-279)." Rummel's conceptualization of libertarianism was broader than most definitions of democracy in the literature; it included a political (civil liberties and political rights) and economic dimension (based on the level of government decentralization). Analyzing data on foreign conflict collected from 1976-1980, Rummel (1983:40) discovered that "empirically there is no instance of violence between politically free or free states." Rummel's work on the democratic peace inspired great interest and debate in the relationship between regime type and conflict at both the monadic and dyadic levels of analysis.

Evidence of interest in testing the dyadic relationship between democracy and conflict inspired by Rummel is found in Stuart Bremer's (1992) article, "Dangerous Dyads: Conditions Affecting the Likelihood of Interstate War, 1816-1965." Bremer compares seven predictors of the outbreak of dyadic conflict: geographical proximity, power parity, power

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(COW) data on interstate wars, i.e., wars between system members that exceed a threshold of 1000 battle deaths (Small and Singer, 1982).

[8] Although some scholars would argue that democracies have never fought wars against one another (e.g. Babst, 1964; Rummel, 1979; Doyle, 1986; Levy, 1988; Maoz and Russett, 1993), others have discussed the possible "exceptions" to the rule (Ray, 1993; Gleditsch and Hegre, 1997). Examples of these "exceptions" include the Spanish-American War (1898), World War II (Finland vs. Western democratic allies), and Peru vs. Ecuador (1981). See Ray (1993, 1995) for an insightful discussion of these cases

status, alliance membership, economic development, militarization, and democracy. His expectation was that democratic dyads would be less likely to engage in war than dyads involving at least one nondemocracy. Bremer's multivariate analysis supports the proposition of peace between democracies; dyads involving one or more undemocratic states resulted in a 3.2% increase in the likelihood of war onset.

Maoz and Russett (1993) also test a dyadic theory of the relationship between regime type and conflict, comparing two theoretical explains of the dyadic democratic peace, a structural (or institutional) theory and a normative (or cultural) theory. The normative model is derived largely from Immanuel Kant's writings on "perpetual peace",[9] and it is based on two assumptions (Maoz and Russett, 1993:625).

> Normative Assumption 1: States, to the extent possible, externalize the norms of behavior that are developed within and characterize their domestic political processes and institutions.
>
> Normative Assumption 2: The anarchic nature of international politics implies that a clash between democratic and nondemocratic norms is dominated by the latter, rather than the former.

Based on these assumptions, Maoz and Russett argue that militarized disputes between states with strong democratic norms should not only be less likely to break out, they should also be less likely to escalate to higher levels of violence. The authors argue that the strength of democratic norms will be positively related to how long democratic institutions have been operating effectively.

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historically.

[9] Kant's 1795 essay, "Perpetual Peace", provides an explicit link between republican forms of government and war. Kant's ideas became much more popular in the democratic peace literature after the publication of three articles by Michael Doyle (1983a, 1983b, 1986). Kant's ideas are discussed in much greater detail in Chapter 2.

An alternative theoretical model, the structural model, is discussed at length in *War and Reason* (Bueno de Mesquita and Lalman, 1992).[10] Focusing on the constraints democratic institutions place on leaders, the structural model makes two key assumptions (Maoz and Russett, 1993:626).

> Structural Assumption 1: International challenges require political leaders to mobilize domestic support to their policies. Such support must be mobilized from those groups that provide the leadership the kind of legitimacy that is required for action.
>
> Structural Assumption 2: Shortcuts to political mobilization of relevant political support can be accomplished only in situations that can be appropriately described as emergencies.

The main conclusion derived from these assumptions is that militarized disputes should be less likely to occur between two states (and less likely to escalate), the higher the political constraints in both countries. Bueno de Mesquita and Lalman (1992) show that negotiation and status quo are the only two possible outcomes of the international interaction game with complete information. Even in environments of incomplete information, democracies signal their dove-like qualities to each other much more effectively, thus leaders in democracies are unwilling to bear the domestic costs associated with the use of force.

Maoz and Russett's (1993) empirical analysis of dyadic conflict in the post World War II period garners support for both the structural and normative models of the democratic peace. They find, however, that "the relationship between institutional constraints and measures of dispute and war occurrence is not as robust as the relationship between measures of democratic norms and the dependent variables. This suggests that the normative model may be a better overall account of the democratic-peace phenomenon than the structural

[10] Other advocates of the structural model include Rummel (1979), Morgan and Campbell (1991), and

model (Maoz and Russett, 1993:636)." This conclusion has been the subject of controversy in recent years, especially when one examines the research at the monadic level of analysis. Advocates of structural and normative models compete to explain the primary (but debatable) finding at the monadic level, i.e., that democracies are just as conflict-prone as nondemocracies.

The Monadic Democratic Peace

While the empirical findings of the democratic peace proposition at the dyadic level of analysis are incredibly robust, the empirical results at the monadic level are mixed. Early work on the link between regime type and general foreign policy behavior concluded that nations with democratic forms of government were more cooperative and peaceful than nondemocratic states (Haas, 1965; Rosenau, 1966; East and Gregg, 1967; Rummel, 1968; Salmore and Hermann, 1969; Zinnes and Wilkenfeld, 1971; East and Hermann, 1974).[11] Rummel's (1983:29) freedom proposition makes a similar claim: "Freedom inhibits violence (the more libertarian a state, the less it tends to be involved in violence; Rummel, 1979:292-293)." His early empirical analysis provides support for the freedom proposition, finding a positive link between libertarianism (or democracy) and peaceful foreign policy behavior.

The majority of the conflict community has not accepted the claims made by Rummel and others due in large part to two critical studies of Rummel's work on the freedom proposition (Chan, 1984; Weede, 1984).[12] In fact, it has been much more common to

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Morgan and Schwebach (1992).

[11] Ray (1995:11) argues that scholars in the conflict community have largely ignored this work.

[12] Chan (1984) and Weede (1984) found no significant relationship between regime type and war involvement. Small and Singer (1976) reached a similar conclusion, i.e., that democracies were just as violent at the monadic level as nondemocracies.

conclude that there is no difference in the war-proneness of democracies and nondemocracies, i.e., that democracies are just are likely to engage in international conflict as nondemocracies overall (e.g. Bueno de Mesquita and Lalman, 1992; Maoz and Russett, 1993; Gleditsch and Hegre, 1997). More recent work (Ray, 1995; Rummel, 1995; Benoit, 1996) has called this conclusion into question, coming back full circle to the idea that democracies are more peaceful as a whole. My purpose here is not to address this debate fully, but rather to point out that the vast majority of the systemic democratic peace work operates with the assumption that democracies are no less war-prone than nondemocracies (the standard assumption). I argue below that a theory developed *at the systemic level* avoids the problem of aggregating potentially faulty findings from the monadic and dyadic levels to the systemic level.

The Systemic Democratic Peace

The final level of analysis, the systemic level, has been addressed theoretically in the democratic peace literature, but it has received very little empirical attention.[13] This perspective usually correlates the number of democratic states in the international system with the incidence of global war or conflict. It is often assumed that peace in the international system follows logically from peace at the dyadic level (Singer and Wildavsky, 1993) or the monadic level (Small and Singer, 1976), especially as the number of democracies increases over time (Starr, 1992). This perhaps explains why so few rigorous

[13] The lack of empirical systemic analysis is not limited to the democratic peace literature, despite extensive theorizing at the systemic level in international relations (e.g. Waltz, 1959, 1979). The few areas characterized by extensive empirical tests at the systemic level of analysis include the distribution of power and war studies, status discrepancy studies, and long cycle analysis.

empirical tests of the systemic proposition have been attempted in recent years. As Gleditsch and Hegre (1997) note, many researchers claiming systemic level results in the democratic peace literature often depend on monadic and dyadic level empirical evidence. In addition, the few empirical studies of the systemic democratic peace analyzing system level data have produced mixed results. Some studies find a positive empirical relationship between proportion of democracies in the system and systemic conflict, while others find a negative relationship.[14]

Maoz and Abdolali (1989) undertake one of the earliest empirical studies of the systemic democratic peace. They test the relationship between regime type and conflict at all three levels of analysis (monadic, dyadic, and systemic). The question they address at the systemic level is (1989:4) "does the level of conflict in the international system decline as the number of politically free states increases?" They test three system-level hypotheses: 1) The higher the proportion of democracies, the lower the number of disputes in the system, 2) The higher the proportion of democracies, the smaller the proportion of interstate disputes that escalate to war, and 3) The more homogenous the interstate system (in terms of regime type), the lower the number of disputes and the smaller the proportion of disputes that escalate to war.

These hypotheses are tested with autoregressive moving average (ARMA) regression models from 1817-1976. Maoz and Abdolali (1989) compare several measures of systemic conflict: the number of disputes begun, the number of disputes underway, the number of dyads in disputes begun, the proportion of dyads underway, the number of wars

[14] Maoz and Abdolali (1989), for example, find a positive relationship between the proportion of democracies in the system and general measures of conflict (militarized disputes), but a negative

begun, and the proportion of wars begun. Independent variables include the proportion of jointly democratic dyads in the system, the proportion of jointly autocratic dyads in the system, and the heterogeneity of regime types in the system.

Their primary findings can be summarized as follows: 1) In general, the proportion of jointly democratic dyads in the system had a positive effect on the number of disputes begun and underway, but a negative effect on the frequency of wars, 2) The proportion of jointly autocratic regimes had similar effects on disputes and wars, 3) These results hold for the 20th century, whereas the proportions of jointly democratic and jointly autocratic dyads negatively affected most of the conflict variables in the 19th century, and 4) The degree of heterogeneity in the system had a positive effect on both dispute and war frequency. In conclusion, Maoz and Abdolali find a positive relationship between global democracy and general measures of systemic conflict (disputes), contradicting the expectation of a peaceful system with an increasing proportion of democracies. Their results on war, however, do support the democratic peace proposition: "while more democracies made for more disputes and more dispute involvements (number of dyads involved in disputes), they tended to make for less war, and they tended to reduce the probability that a low-level militarized dispute would escalate to an all-out war (Maoz & Abdolali, 1989:29-30)."

One attempt to formalize the systemic level relationship between the level of global democracy and the level of systemic conflict is undertaken by Gleditsch and Hegre (1997).[15] Their formal model is the first to provide a systematic and logical link between

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relationship between the proportion of democracies in the system and systemic war.

[15] The formal model developed in the Gleditsch and Hegre (1997) paper is an extension of the model in

the three levels of analysis in the democratic peace literature. They criticize previous tendencies to assume either that an increase in the proportion of democracies globally will decrease the level of systemic conflict (which follows from the dyadic level) or that the spread of democracy will have no impact on the overall level of conflict in the system (which follows from the monadic level).

Gleditsch and Hegre (1997) start with an assumption that nondemocratic dyads have a lower propensity for war than mixed democratic-nondemocratic dyads.[16] They model the relationship between regime types in the international system and systemic conflict as a function of 1) the probability of war in jointly autocratic dyads, 2) the probability of war in democratic-nondemocratic dyads, 3) the proportion of democracies in the system, and 4) the total number of nations in the system. If the probability of war is greater in the mixed dyads than in the jointly autocratic dyads, then the relationship between the proportion of democracies in the international system and the frequency of international conflict is bell or parabola-shaped. In other words, if the proportion of democracies in the system is low, then the initial effect of new democracies entering the system is an overall increase in the level of global conflict. This increases up to a threshold point, where the proportion of democracies is large enough to produce greater levels of systemic peace. The threshold point is a function of the probability of war in mixed and jointly autocratic dyads. In conclusion, the Gleditsch and Hegre (1997) model predicts an increasing historical level of democracy to have produced more war. Their empirical analysis provides some support for this predicted theoretical relationship, with the

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Raknerud and Hegre (1997).

[16] The authors note that this assumption is supported empirically for the incidence of war, the onset of

pre-World War II time period being associated with more democracy and more war, and the post-World War II time period being characterized by more democracy and less war in the international system.

Systemic Theorizing vs. Aggregation Across Levels of Analysis

As I noted earlier, the differences between the dyadic and monadic level findings in the democratic peace literature have been treated as a puzzle by many scholars (e.g. Bueno de Mesquita and Lalman, 1992; Maoz and Russett, 1993) The articles by Maoz and Abdolali (1989) and Gleditsch and Hegre (1997) are good examples of theoretical aggregation from the monadic and dyadic levels of analysis in the democratic peace literature to the systemic level. Gleditsch and Hegre (1997), for example, view the systemic level relationship between democracy and conflict as a puzzle that emerges from the somewhat contradictory findings at the monadic and dyadic levels. They argue that the systemic level:

> has rarely been subjected to empirical investigation, but it is commonly assumed that it can be answered by a simple deduction from one of the two other levels. The most common conclusion is that if democracies do not fight each other, an increasing number of democracies in the system will produce a more peaceful system. Others have argued that if democracies are as war prone as nondemocracies, it makes no difference at the system level if the number of democracies increases. Both of these system-level statements cannot be true at the same time, so there must be something wrong either with the deductions or with the empirical regularities. (284)

Maoz and Abdolali (1989) also regard the systemic level relationship between democracy and war as a logical extension of the monadic and dyadic level results:

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new dyadic interstate war, and militarized disputes (300).

> The argument that democracies are less conflict prone than autocracies has a normative implication that can—and often has been—extended to the systemic level of analysis. This is also a logical extension of the 'joint freedom' proposition. If politically free states do not fight one another, then the more democracies, the less international conflict. Extended ad infinitum, Kant's notion of eternal peace—a peaceful world composed of a federation of politically free republics –gets a new look according to this logic. It is therefore important to examine whether the joint freedom proposition has significant system-level implications. (8-9)

The theoretical relationship between democracy and war at the systemic level has not been fully elaborated in previous studies, in large part because scholars either assume that the systemic level relationship can be deduced from other levels of analysis, or they discount the importance of the democracy-conflict relationship at the systemic level.[17] This lack of theorizing at the systemic level presents several problems in assessing the relationship between democracy and war in the international system. As Huntley (1996:45) argues succinctly, "to view the significance of the liberal peace as a test of opposing 'levels of analysis' misses deeper issues." The most significant problem with aggregating findings across levels of analysis is that the empirical results, especially at the monadic level of analysis, are debatable. For example, Gleditsch and Hegre (1997) assume that the probability of war participation at the monadic level is the same for democracies and nondemocracies. Whether one should accept this "conventional wisdom" given the contradictory findings at the monadic level is highly questionable.

A larger issue is the need for a systemic theoretical understanding of the relationship between war and democracy. Theories developed at the systemic level have several

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[17] Wade Huntley (1996) develops one of the only *systemic level* theories of democracy and war in the literature, and his theory is derived largely from the works of Kant.

advantages over their "reductionist" counterparts (Waltz, 1979). First, decisions made by agents (nations, leaders, etc.) occur in the context of the international system. The structure of the system has an impact on the units in the system "through socialization of the actors and through competition among them (Waltz, 1979:74)." A theoretical understanding of the democratic peace at the systemic level will provide insight into the context and rules of the international system, and how these are changing over time.[18] Second, "systemic theories are generally more parsimonious than their first-image and second-image competitors (Mansfield, 1994:6)." One reason for the lack of parsimony of first and second image theories is that it is "difficult to trace the effects of foreign policy behavior on global and regional systems (James, 1997:6)." The "puzzle" that has been discussed in the democratic peace literature, i.e., the contradictory findings between the monadic and dyadic levels of analysis, demonstrates the difficulty in drawing systemic level conclusions from "reductionist" theories. Finally, some scholars have argued that systemic or third-image level theories have fared better in explaining international politics. Waltz (1979:39) makes the point succinctly.

> ...a systems approach will be needed, if outcomes are affected not only by the properties and interconnections of variables but also by the way in which they are organized. If the organization of units affects their behavior and their interactions, then one cannot predict outcomes or understand them merely by knowing the characteristics, purposes, and interactions of the system's units. The failure of the reductionist theories...gives us some reason to believe that a system's approach is needed.

All of these arguments demonstrate the necessity of developing a systemic level theory of the democratic peace. Contrary to what some scholars have argued, the

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[18] Keohane (1986:193) makes a similar argument: "a systemic theory is important because we must

significance of the liberal peace does not make systemic level approaches to the debate obsolete.[19] Rather, there are systemic level consequences of the relationship between democracy and war that must be examined. And perhaps the most significant consequence of the democratic peace at the systemic level is the potential for fundamental change in the rules and norms of interaction in the international system.

Conclusion

In this chapter, I have briefly reviewed the literature linking regime type and conflict at three levels of analysis: monadic, dyadic, and systemic. I have argued that in order to understand the systemic level relationship between democracy and war, we need to go beyond theoretical aggregation across levels of analysis. A *systemic* level theory of the democratic peace phenomenon will provide a greater understanding of the dynamic relationship between democracy and war and how this relationship is affecting the context, structure, and rules of interaction in the international system. Given the significant policy implications of the democratic peace, it is important to determine if the growth in democracy and the outcomes of wars over time have altered the nature of the international system. If, as Rosenau (1990) argues, world politics has entered a state of turbulence and change that could alter the basic "parameters" of the system (James, 1997), an understanding of one source of that change, the democratic peace, will be extremely useful. Only a theory of the

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understand the context of action before we can understand the action itself."

[19] Huntley (1996:45) states a good example of this conclusion: "For neorealists, no peace dependent on only the internal pacific disposition of liberal republics can endure. Supporters of the Kantian interpretation respond that properly constituted republics can, in fact, overcome the anarchy among them, and that the present liberal peace therefore challenges the adequacy of 'systemic' theories of international politics."

relationship between democracy and war developed at the systemic level can address these larger political and scholarly implications.

Table 1 - Democratic Peace Research at the Monadic Level of Analysis

Authors (Year)	Dependent Variable(s)
Small and Singer (1976)	Frequency, average duration, average severity, and battle deaths of COW wars by regime type
Rummel (1979, 1983)	Foreign conflict scale (sum of negative communications, negative sanctions, warning and defensive actions, and military violence)
Chan (1984)	Total democratic COW war participations per year divided by total system membership years
Weede (1984)	Frequency of war involvement per year
Maoz and Abdolali (1989)	Frequency of participation and initiation of militarized interstate disputes and COW wars
Morgan and Campbell (1991)	Dichotomous measure of dispute (MID) escalation to a COW interstate war
Benoit (1996)	Frequency count of war involvement per year (using Weede's 1984 data)
Gleditsch and Hegre (1997)	Percentage of country years with conflict (COW interstate wars, militarized interstate disputes, and armed conflict)

Table 2 - Democratic Peace Research at the Dyadic Level of Analysis

Authors (Year)	Dependent Variable(s)
Babst (1964, 1972)	Dyadic war involvement (Wright's (1942) definition of war)
Rummel (1979, 1983)	Dyadic directed foreign conflict
Maoz and Abdolali (1989)	Dyadic involvement in militarized interstate disputes (MIDs)
Bremer (1992)	Dichotomous dyadic measure of COW war outbreak/no war outbreak (limited to war participants on the first day of a war)
Bueno de Mesquita and Lalman (1992)	Dichotomous measure of negotiation or status quo outcome (one) versus any other outcome of the International Interactions game (for 238 randomly generated European dyads)
Maoz and Russett (1992)	Dyadic involvement in militarized interstate disputes
Morgan and Schwebach (1992)	Escalation of a militarized dispute to a COW interstate war in a dyad
Weede (1992)	Dyadic war and militarized dispute involvement given territorial conflict or strategic interdependence
Bremer (1993)	Annual dichotomous measure of dispute and war outbreak between initial protagonists
Maoz and Russett (1993)	Dichotomous measure of occurrence of dyadic militarized dispute/no militarized dispute for politically relevant dyads
Rousseau, et al (1996)	Initiation of force and highest level of force used in a crisis (testing monadic and dyadic effects in one model)
Oneal, et al (1996)	Dichotomous measure of dyadic dispute involvement (MID) annually for politically relevant dyads
Gleditsch and Hegre (1997)	Percentage of dyad years at war (using COW definition of interstate war) and armed conflict (Wallensteen and Sollenberg, 1996)
Oneal and Russett (1997)	Dyadic measure of dispute occurrence/no dispute occurrence per year (for politically relevant dyads)
Raknerud & Hegre (1997)	Dyadic outbreaks of COW interstate wars (measured on the first day of the war)

Table 3 - Democratic Peace Research at the Systemic Level of Analysis

Authors (Year)	Dependent Variable(s)
Maoz and Abdolali (1989)	Annual measures of militarized disputes begun, disputes underway, dyads in disputes begun, proportion of dyads underway (disputes), number of COW interstate wars begun, proportion of COW interstate wars begun
Gleditsch and Hegre (1997)	Annual measure of the proportion of country years at war (COW interstate wars)

CHAPTER 2

A SYSTEMIC THEORY OF WAR AND DEMOCRACY

> Woodrow Wilson...saw clearly one of the essential elements of a third-image analysis, that everyone's policy depends upon everyone else's. With many authoritarian states in the world, he realized that even the non-authoritarian state, must on occasion be prepared to use force to defend its interests. But, convinced that democratic states are peaceful because their governments reflect the aspirations of the people, he foresaw a day when the internal condition of all states would mean not the constant possibility of war, but rather the assurance of perpetual peace. (Waltz, 1959:226-227)

In Chapter 1, I argued for the development of a systemic level theory of the relationship between democracy and war. While advocates of the democratic peace view the spread of democracy as a potential force for change in international relations, defenders of neorealism characterize the international system as immutable, i.e., international politics have been and will continue to be determined by anarchy and the distribution of power. In this chapter, I outline the most important features of the neorealist theoretical approach to international relations. Next I develop my theoretical model of the democratic peace, drawing heavily from the work of Immanuel Kant (1970a; 1970b; 1970c) and Wade Huntley (1996). I consider first the *endogenous* and *evolutionary* relationship between democracy and war. This is followed by a discussion of three other factors that have important

influences on democracy and war in the international system: power concentration, trade, and production. To reiterate, my theoretical model attempts to address the following questions:

- What is the *systemic level* relationship between democracy and war, and how is this relationship *evolving* over time?
- Are the *rules* and *norms* of the international system being transformed as the international system becomes more democratic?
- How do economic relations between states in the system influence the systemic level relationship between democracy and war over time?
- How is the level of war in the international system related to the concentration of power between nation-states?

I derive propositions to be tested and I conclude with a general discussion of the novel insights offered by my theoretical model.

Neorealism and its Critics

The theoretical approach termed "realism" dates as far back to Thucydides' study of the Peloponnesian Wars.[20] Hans Morgenthau is one of most influential modern realist writers, in addition to Kenneth Waltz, whose systemic level theory of realist politics (1959, 1979) has been influential in the study of international relations in recent years. Realism in its original or structural (neorealist) form, makes three key assumptions about international politics (Keohane, 1986b:164-165):

- Nations are the most important actors in international relations.
- States behave according to rational, utility maximizing principles.
- States seek power and calculate their interests in terms of power.

Many early theories in the realist tradition focused on individual state behavior, or a nation's foreign policy (the monadic level). Waltz (1979) criticizes these "reductionist" approaches, arguing that the organization of states in the international system has a

profound impact on state behavior. To understand state behavior at the monadic (or dyadic) level, it is first necessary to understand the structural features of the international system, the forces that produce structural change, and how the structure of the system influences and constrains agents' actions.

Waltz's systemic theory of international politics is rooted in the basic ideas of system and structure; thus it is worthwhile to clarify each of these terms.[21] In general, a system "refers to a group of parts or units whose interactions are significant enough to justify seeing them in some sense as a coherent set...[and a system] therefore comprises units, interactions, and structure (Buzan, et al, 1993). A broader definition of a system is provided by Brecher and Ben Yedhua (1985:17): "a set of actors who are situated in a configuration of power (structure), are involved in regular patterns of interaction (process), are separated from other units by boundaries set by a given issue, and are constrained in their behavior from within (context) and from outside the system (environment)[22]." For Waltz (1979:88), the defining characteristic of the international system is the way in which the system is *structured*, with structure being determined by 1) the principle by which the units are organized, 2) the differentiation of the units, and 3) the distribution of capabilities across units.

While structure does not directly influence behavior in the system, Waltz (1979:74) asserts that its impact occurs indirectly through "socialization of the actors and through competition among them." Socialization creates norms of behavior that constrain and

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[20] See Thucydides (400 B.C./1951).

[21] Another key concept in neorealist thought is "process" which can be defined as "the patterned relations among units that go on within a system—relations that reflect in varying degrees the constraints imposed by the system's structure (Ruggie, 1986:134)."

[22] James (1997) includes a summary table of various definitions of "system" in the literature. He adopts

shape states' decisions, in addition to encouraging conformity among nations in the system. Competition, on the other hand, "spurs the actors to accommodate their ways to the socially most acceptable and successful practices (Waltz, 1979:77)." Thus structure both constrains behavior, and encourages the adoption of successful strategies in world politics.

Waltz (1979) argues that systems or structures are transformed by changes in one of the three components of structure (ordering principle, differentiation of units, distribution of capabilities). The two primary ordering principles of the international system are anarchy and hierarchy, and change from one ordering principle to another would fundamentally transform the system. Like most international relations scholars, Waltz believes that the modern international system is best characterized by anarchy (a decentralized system lacking a central authority) as opposed to hierarchy (one dominant state). Changes in the second characteristic of structure, differentiation of units, can also produce changes in the system's structure. Waltz, however, asserts that nations are "like units" motivated by similar concerns, namely the pursuit of power and security. Thus he does not consider changes in the units comprising the system a fundamental source of structural change in the international system.[23] Finally, changes in structure can occur if the distribution of capabilities across units changes. The vast majority of Waltz's conclusions are based on comparisons of different distributions of power in the international system precisely because the other two characteristics of structure, anarchy and the differentiation of units, are constant or assumed unimportant in producing systemic

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the Brecher and Ben Yehuda (1985) definition in his study of elaborated structural realism.

[23] "Since no functional differentiation of states exists apart from that imposed by relative capability, the

or structural change. In addition, much of the work building on Waltz's neorealist approach emphasizes the distribution of power as a primary determinant of conflict and peace in the international system.[24]

Waltz's systemic theory of international politics has been the recipient of both widespread support and spirited criticism, testimony to the profound impact of Waltz's ideas on international relations research. One of the most fundamental criticisms of structural realism is that it cannot adequately account for structural change (e.g. Buzan and Jones 1981; Ashley, 1986; Keohane, 1986a, 1986b; Ruggie, 1986). Waltz (1979) emphasizes only one source of structural change, the distribution of capabilities among states, and he minimizes the impact of changes in the differentiation of units on structural change. Ruggie (1986) criticizes Waltz on this score, asserting that differentiation of units in the international system provides an essential source of structural change.

> The problem is that a dimension of change is missing from Waltz's model. It is missing because he drops the second analytical component of political structure, differentiation of units, when discussing international systems....If anarchy tells us *that* the political system is a segmented realm, differentiation tells us *on what basis* the segmentation is determined. The second component of structure, therefore, does *not* drop out; it stays in, and serves as an exceedingly important source of structural variation. (Ruggie, 1986:142)

Ruggie focuses on the shift from the medieval to the modern international system, a system transformation unexplained by Waltz's framework, primarily because both systems are anarchic. Ruggie asserts that changes in the distribution of capabilities in the system cannot account for the striking systemic change in the relevance of property rights and state

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second component of political structure is not needed at the international level (Ruggie, 1986:135)."

[24] See, for example, the debate on systemic polarity and war.

sovereignty, concepts that were almost nonexistent in the medieval period, yet crucial in the modern system.[25]

Even Waltz (1986:343) admits the potential significance of the differences among nations as a source of structural change.

> *Changes* in, and transformations of, systems *originate not in the structure of a system but in its parts*. Through selection, structures promote the continuity of systems in form; through variation, *unit-level forces contain the possibilities of systemic change*...Systems change, or are transformed, depending on the resources and aims of their units and on the fates that befall them. [emphasis added]

We will see below that systemic war has a significant impact on the dynamic changes in the differentiation of states (units), especially in terms of their domestic institutions, or regime types. Increasing numbers of democratic states, in turn, have systemic level consequences, especially for the rules and norms of behavior in the international system. In the next section, I discuss various extensions of Waltz's theory that add the notions of rules, regimes, and norms. These concepts will be crucial in the theoretical model developed in the following section.

Beyond Neorealism

The neorealist (or structural realist) theoretical approach has expanded considerably since the publication of Waltz's *Theory of International Politics*. Numerous academics accept Waltz's basic systemic approach and his emphasis on the importance of structure (and its three components) in explaining international relations. Many of the extensions of

[25] Buzan, Jones, and Little (1993:65) also discuss the importance of unit differentiation as a force for structural change. They emphasize the relevance of the distributional structure, or "systemic patterns in the distribution of unit attributes."

structural realism have concentrated on the importance of rules and norms of behavior in the system.

Rules and norms play an important role in regime theory, one of the most prominent extensions of neorealism. Regime theory finds its roots in work by Robert Keohane and Joseph Nye (1972, 1977) on transnational relations and work by John Ruggie (1975) on regimes.[26] The concept of an international regime broadly encompasses both rules and norms, which is made clear in the following definition of a regime: "sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations (Krasner, 1983:2)."

Regime theorists argue that the international system is characterized by a set of unwritten rules, even though the system is anarchic.[27] Rules in the international system have been conceptualized in a variety of ways.

> Nations must have available *rules*, the media through which they communicate with one another and coordinate their actions...A rule is, in its most basic sense, an understanding about how to proceed or "go on" in given social circumstances. (Dessler, 1989:454-455)
>
> *Rules* are general imperative principles which require or authorise prescribed classes or groups to behave in prescribed ways. (Bull, 1995:52)
>
> *Rules* are specific prescriptions or proscriptions for action. (Krasner, 1983:2)

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[26] For further work on regime theory, see Young (1980), Puchala and Hopkins (1982), Stein (1982), Strange (1982), Haas (1983), Krasner (1983), Ruggie (1983), Young (1983), Keohane (1984), Haggard and Simmons (1987), Young (1991).

[27] Dessler (1989:458-459) elaborates this point: "Scientific realism insists that *all* social action depends on the preexistence of rules, implying that even under anarchy, rules are an essential prerequisite for action...Rules are...both logically and praxiologically necessary for social action."

Examples of rules generally practiced in the international system include the exchange of diplomats, acceptance of the right of neutrality, the recognition of state sovereignty, and the use of treaties to formalize international agreements.

The concept of international norms, another key element of regime theory, is closely related to the idea of rules. Norms often involve a moral dimension or are "morally binding regardless of considerations of narrowly defined self-interest (Keohane, 1984:57)." Even if one adds a moral element to the conceptualization of norms, it is still difficult to distinguish norms from rules. Rules usually entail specific rights or obligations, and they can usually be altered more easily than norms (Keohane, 1984:58).

Goertz and Diehl (1992) apply the theory of international norms to the study of international conflict. They argue that an international norm is characterized by four key elements. First, norms are identified by their "regularity and consistency of behavior (Goertz and Diehl, 1992:636)" Second, adherence to norms is often in conflict with a nation's self-interest. Third, those who violate international norms must face some form of sanction or punishment. Finally, there is a normative element, or "issues of justice and rights of a moral or ethical character (Goertz and Diehl, 1992:638-639)." The authors demonstrate the relevance of each of these properties of norms in their historical analysis of the decolonization norm that has developed over the last two hundred years.

The importance of rules and norms in world politics is also stressed in the theory of international society, an approach developed by British scholars such as E.H. Carr, C.A.W. Manning, Hedley Bull, and Martin Wight, among others. Bull (1995:13) asserts that an international society exists when "a group of states, conscious of certain common interests and common values, form a society in the sense that they conceive themselves to be bound

by a *common set of rules* in their relations with one another, and share in the working of common institutions." A focus on international society stresses the importance of common institutions, economic interactions, ideologies, and transnational ties in promoting cooperation between states, an approach that goes beyond the neorealist tendency to emphasize conflict and the distribution of power in the international system.

The theoretical concepts of rules, norms, and regimes discussed above are extremely important in the cultural or normative theoretical argument of the democratic peace proposition. Maoz and Russett (1993), for example, contend that democracies do not fight each other (the dyadic proposition) because they externalize the norms of behavior that characterize their domestic political processes. These norms or rules include the resolution of conflicts by nonviolence and respect of political opposition. It is common in the democratic peace literature to emphasize the peaceful relations or peaceful community among democracies.[28] What has not been explored at the systemic level, however, is how changes in the relationship between democracy and war over time influence the types of rules and norms of behavior practiced in the international system or "international society" at large. I demonstrate below that Kant's cultural argument for a democratic (perpetual) peace has a systemic component that has been largely ignored in the literature. In addition, Kant emphasizes the important role wars play in promoting republican forms of government in the system. The systemic theoretical model developed in the next section emphasizes both this endogenous aspect of the relationship between democracy and war,

[28] A nice example is Singer and Wildavsky's (1993) distinction between "zones of peace" among democracies and "zones of turmoil" between nondemocracies (or a mixture of democracies and nondemocracies).

and the evolutionary changes in the rules and norms this relationship produces in international relations.

A Systemic Theory of Democracy and War

Waltz's neorealist theory of international politics, and the extensions discussed earlier, contribute to our understanding of war at the systemic level. As Keohane (1986b:159) notes, however, "Realism is particularly weak in accounting for change, especially where the sources of that change lie in the world political economy or in the *domestic structure of states*." In this section, I argue that the domestic regime type of individual states has a significant impact on war in the international system, and that war both creates changes in these domestic structures and provides the impetus for structural change. I first summarize Kant's theoretical ideas for a perpetual peace, focusing on the relationship between democracy (republicanism) and war at the systemic level. Next, I analyze the reverse relationship, i.e., how wars in the system affect the level of democracy internationally. The crucial elements of the theoretical argument are gleaned from Immanuel Kant's work on perpetual peace and Wade Huntley's (1996) third image explication of Kant's ideas.

Conditions for Perpetual Peace

Many theoretical explanations of the democratic peace proposition, especially at the dyadic level, stem from Kant's (1795) essay on "Perpetual Peace".[29] Yet the "systemic" aspects of Kant's writings have been largely ignored. Wade Huntley (1996) fills this

theoretical gap by elaborating the systemic (or third image) sources of the liberal peace developed by Kant. Huntley's analysis of Kant's writings on the liberal peace is quite comprehensive, therefore I refer frequently to his interpretation of Kant's philosophy in the sections that follow.

Huntley (1996) begins by discussing Kant's moral philosophy that serves as a foundation for perpetual peace. Kant is concerned with the conditions for acting morally and he distinguishes between two types of awareness or experience, noumenal and phenomenal. "Phenomenal experience informs us of our more 'selfish' needs and desires, including our quests for security and happiness (Huntley, 1996:47)." Noumenal experience, on the other hand, refers to morality and the recognition of rights, especially "the basic equality of all humans, and the priority of human freedom, most especially the freedom to be moral (Huntley, 1996:47)." Noumenal awareness is essential for creating a moral law or "categorical imperative". One of the most important categorical imperatives discussed by Kant is the elimination of warfare between individuals and states (Kant, 1970c:174; Huntley, 1996:48). Kant (1970b:99) contends that only a republican form of government, founded on freedom for individuals, a single common legislation, and legality equality for all, "establishes the possibility of freedom as well as security under the rule of law. The key characteristics of the republic are the retention of sovereignty by the citizens who compose it and the incumbent separation of legislative and executive powers. (Huntley, 1996:48)"

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[29] See, for example, Maoz and Russett (1993) and Doyle (1986).

The republican form of government plays an essential role in Kant's vision of a *perpetual peace*. Kant (1970b:99-105) identifies three key conditions for such peace, or "an international rule of law (Huntley, 1996:49)":

- The Civil Constitution of Every State shall be Republican.
- The Right of Nations Shall be based on a Federation of Free States.
- Cosmopolitan Right shall be limited to Conditions of Universal Hospitality.

The first condition establishes the supremacy of republican constitutions for establishing peace. Kant (1970b:100) argues that republican governments are inherently inclined towards peace because the government requires the public's consent before it becomes embroiled in warfare. War is costly in terms of human lives, economic resources, and the accumulation of debt incurred throughout the course of a war. Thus the public will act as a constraining force on the ability of the state to engage in warfare.[30]

The second condition implies that the federation of free states envisioned by Kant can support a perpetual peace only if its members are republics. The federation extends the "rule of law" inherent in the domestic structure of republican constitutions to an international "rule of law".[31] Huntley (1996:50) elaborates this point: "Kant is holding that establishing freedom and the rule of law domestically and internationally are mutually dependent, symbiotic processes." Kant does not support the idea of a world government that enforces an

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[30] Kant recognizes that states must be prepared to defend themselves against non-republican governments, but he believes that the public in republican states will prevent their leaders from *initiating* war. (Huntley, 1996:49)

[31] Many supporters of the democratic peace proposition use this aspect of Kant's argument to assert that while democracies will be peaceful amongst themselves, there is no reason to believe that they will be more peaceful overall, or that a world filled with a greater number of democracies will not necessarily translate into greater peace. I show below, though, that the "rule of law" between democracies extends to the international system. In particular, the rules or norms of behavior between democracies diffuse throughout the international system over time as the proportion of democracies in the system increases.

international rule of law. Rather nations must maintain their sovereignty, evidence that Kant's perpetual peace is firmly grounded in the concept of federalism.

Finally, Kant insists that universal hospitality, or the right for people to travel to other countries, is also an important condition for perpetual peace between nations. "Originating in the priority of human freedom, Kant identifies a 'world community' manifesting moral duties beyond the state and common to all (Huntley, 1996:51)." Kant's emphasis on universal hospitality follows logically from his moral philosophy, particularly his categorical imperative that emphasizes the respect for freedom. "The idea of a cosmopolitan right...is a necessary complement to the unwritten code of political and international right, transforming it into a universal right of humanity (Kant, 1970b:108)."

To summarize, Kant believes that perpetual peace depends on republican forms of government domestically, an international federation of free states, and a principle of cosmopolitanism, or universal hospitality. The categorical imperative to end warfare can only be reached through the spread of a domestic and international "rule of law", whose principles are founded on individual freedom, legal equality, and separation of executive and legislative powers. A republican form of government built on these principles creates the freedom to act morally. "*The history of the human race as a whole can be regarded as the realisation of a hidden plan of nature to bring about an internally—and...externally, perfect political constitution as the only possible state within which all natural capacities of mankind can be developed completely* (Kant, 1970a:50)." Kant concludes that democracy leads to peace in the international system by decreasing the uncertainty that arises in a state of anarchy (or state of war).

War: A Force for Democracy

One of the novel aspects of the systemic dimension of Kant's theoretical approach is that he considers the relationship between democracy and war to be endogenous, i.e., he argues that both democracy and war cause changes in each other across time.[32] Not only do republican constitutions promote peace in the international system, "the propensity for war itself sows the seeds of war's end (Huntley, 1996:56)." War serves as a catalyst for the development of republican constitutions and an international "rule of law" among nations. Several scholars have discussed the importance of the endogeneity between democracy and war (James, Solberg, and Wolfson, 1995; Midlarsky, 1995; Gates, Knutsen, and Moses, 1996; Thompson, 1996), but few have examined this relationship at the systemic level.[33]

According to Kant, war is the strongest force creating more democracy in the international system, pushing us ever closer to a federation of free states, one pillar of perpetual peace. War justifies the development of democratic governments and creates a more widespread peace, which is essential to the survival and improvement of republican constitutions. (Huntley, 1996:61)

> Nature has thus again employed the unsociableness of men, and even of the large societies and states which human beings construct, as a means of arriving at a condition of calm and security through their inevitable *antagonism*. Wars...are the means by which nature drives nations to...abandon[ing] a lawless state of savagery, and enter[ing] a federation of peoples in which every state, even the smallest, could expect to derive its security and rights not from its own power or its own legal judgement, but solely from this great federation. (Kant, 1970a:47)

[32] A technical discussion of the issues surrounding endogenous relationships is contained in Appendix A.
[33] The most notable exception is James, Solberg, and Wolfson (1995).

According to Kant, war both creates and destroys nations, and brings about new relations between states in the system. The experience of civil and international war improves the internal institutions of states over time, creating "a state of affairs...which,...can maintain itself automatically (Kant, 1970a:48)." And to protect this improvement in their domestic republican constitutions (the domestic rule of law), states seek the same improvements in their international relations (the international rule of law). Huntley (1996:56) elaborates: "The necessary elements of the rule of law—civil law, international law, and the law of world citizenship—all emerge from...war."

War also promotes the development of democracy because democracies tend to win the wars they fight more often than nondemocracies.[34] Lake (1992:31) finds that of the 26 wars fought since 1816 between democracies and autocracies, democracies have won 81% and lost 19%. After a war, democratic victors are better able to influence the development of democracy in individual countries, establish liberal economic institutions, and promote democratic rules and norms of behavior in the international system.

Lake (1992) offers three theoretical explanations for why democracies are more likely to win wars they fight as opposed to nondemocracies. Lake's hypotheses are derived from the literature on rent-seeking. He argues that democratic states earn fewer rents overall, making it possible to 1) "devote more resources to security, (2) to enjoy greater societal support for their policies, and therefore a greater extractive capacity; and (3) to form overwhelming countercoalitions against expansionist autocracies (Lake, 1992:30)." The last

[34] Gaubatz (1997:147) reaches a similar conclusion: "history shows that democratic victory in war has been the most effective instrument for expanding the democratic sphere." Likewise, Huntington (1991) emphasizes the importance of World War II outcomes on subsequent waves of democratization.

part of the argument implies that democracies have historically allied together in large-scale wars, and that these alliances have increased the probability of victory for democracies.[35]

Democracies are more likely to win the wars they fight for other reasons as well. First, democracies have historically mobilized resources more effectively in wartime than nondemocracies. Second, the public in a democracy will be willing to bear greater costs in war because "in legitimate states, the mass publics are less likely to believe that they will be excluded from the gains from victory and more likely to believe that the costs they must bear will be fairly distributed throughout society (Stam, 1996:65)." Also, because democratic leaders are more likely to be punished for engaging in unsuccessful wars (Bueno de Mesquita and Siverson, 1995), democracies will be less likely to enter into wars that will entail great material and political costs. Given that democracies are more likely to win the wars they fight, I expect war to have a positive impact on democracy at the systemic level.

Gleditsch and Hegre (1997:308) reach a similar conclusion: "War would seem to promote more democracy in the longer run, and---at least above a certain level---more democracy in turn leads to a reduction of war." The success of democracies in war over time has both increased the overall proportion of democracies and encouraged peaceful rules of engagement in the international system.

Kant also alludes to the strength of democratic governments. "For Kant, the rule of law within a state does not merely signify a regime type, but *is itself an aspect of state power*. In the long run, the liberal republic is also the stronger state (Huntley:1996:55)."

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[35] Reiter and Stam (1997) criticize the alliance explanation of democratic success in warfare, pointing out that 80% of the wars analyzed by Lake (1992) were fought by a single democracy without allied support. Their empirical analysis of war outcomes shows that "the tendency for democracies to win the wars they fight is most likely due to the greater legitimacy of democratic regimes rather than because of lower rent-seeking or democratic bandwagoning (26)."

This provides further support to his argument that war serves as an impetus for the development of republican constitutions, and the democratic "rule of law" in the international system.

In conclusion, Kant shows us that the historical relationship between democracy and war is an endogenous and evolving one. In the next two sections, I discuss how Kant's theory of the systemic democratic peace differs from Waltz's systemic theory of international politics. I argue that the most significant consequence of the movement towards a democratic "rule of law" internationally, is that the norms and rules that characterize behavior between democracies are gradually diffusing throughout the international system over time. This idea casts doubt on the neorealist contention that the international system is constant and unchanging.

A Comparison of Waltz and Kant

Kant and Waltz come to very different conclusions about the systemic level relationship between the domestic structure of states and war. While Waltz views the differentiation of units as relatively unimportant for explaining structural change, Kant envisions a dynamic relationship between democracy and war; war promotes republican constitutions in individual states, which in turn promote the spread of the domestic "rule of law" in the international system.

Huntley (1996) identifies three other key differences in the Kantian and neorealist theoretical approaches. First, both Kant and Waltz stress the importance of anarchy in the international system, but they differ in their conceptualizations of anarchy. For neorealists, anarchy is simply the lack of central authority in the international system. Kant, on the other

hand, views anarchy as "the state of war", a state that impedes the categorical imperative to act morally. At the other extreme is the rule of law embodied in the perpetual peace, a law that is based on legitimacy rather than coercive power. (Huntley, 1996:60)

The source of structural change is also a source of disagreement between Kant's theory of international politics and neorealism. Waltz argues that changes in the distribution of capabilities has the largest impact on structural change, due to the persistence of anarchy and the "likeness" of units in the system. For Kant, war is the greatest force creating structural change through its impact on the domestic structure of the units in the system. The structure and the units "are always interacting, defining a process of evolutionary change that continues perpetually (Huntley, 1996:61)." Thus Kant, like Ruggie, views the differentiation of units in the system as an important source of structural change. His theoretical approach specifies how the structure of the system (particularly the state of war) produces changes in the units, and how the internal make-up of the units results in changes in the structure (moving the system closer to the "rule of law" internationally).

The third primary source of disagreement between Waltz and Kant lies in their interpretation of the impact of the ordering principles (anarchy, hierarchy) on the international system. Waltz treats the structure's ordering principles, anarchy and hierarchy, as diametric opposites, whereas Kant places them on a continuum. The state of war, or anarchy is at one end of the continuum, and the rule of law is at the other. "This continuity between war and peace follows from the dialectical conception of their interaction. History may be viewed as the story of erratic (and never ending) progress along this continuum (Huntley, 1996:62)."

Both Kant and Waltz recognize the importance of the socialization among states and the competition between them. In the next section, I discuss the competitive and socializing forces that produce a dynamic relationship between democracy and war over time. One important consequence of this dynamic relationship that has been overlooked is its impact on the norms and rules of engagement in the international system.

The Diffusion of Democratic Rules and Norms

Huntley (1996) argues convincingly that the processes of socialization and competition are equally important in Kant's and Waltz's systemic theory of international politics.

> In neorealism, competition and socialization are the two mechanisms by which the structure of anarchy influences international outcomes. For Kant, put in neorealist terms, the violence inherent in the structure of anarchy actuates a transformational dynamic independent of the intentions of states themselves. Anarchic competition compels states to extend the rule of law internally, and externally in their relations with other states ruled by law, while socialization reinforces both these republics' peaceful relations and other states' competitive incentives to "join the party." In neorealism, competition and socialization produce convergence in state behavior and international outcomes. Kant's thought adds the idea that this process works dynamically, promoting convergence towards the rule of law. This is the core of the systemic dimension of Kant's formulation. (Huntley, 1996:58-59).

The greater strength and success of republics over time encourages other states to liberalize (competition), while the "rule of law" externalized by democracies in their relations with each other (socialization) creates a more democratic international "rule of law" over time.[36]

[36] Ray (1995) also discusses the importance of competition on global trends in democracy. "Nation-states in the global system see themselves as facing fundamentally...similar goals, such as political autonomy, territorial integrity, and economic well-being. It is only natural, or rational, that political leaders in the great majority of...states would watch and see who among them best achieves these goals and how. (53)"

One of the most important consequences of this process of socialization and competition is its impact on the rules and norms of international interaction. The more democratic the international system, the more likely that the norms of interactions between states will change. In particular, the greater the number of democracies in the system, the more likely the traditional "rules" of the international system (e.g. power politics) will become replaced by more cooperative, conciliatory, and peaceful rules of interaction like we see between democracies. In Kant's language, the greater the number of republican governments in the world, the more widespread their international "rule of law", which is both created from their domestic rule of law and perpetuated by the peace among themselves. War serves to promote the spread of republican forms of government, and the overall strength and success of republics serve to further their growth and influence over time. Cooperation in economic and cultural spheres serves to strengthen the peaceful and cooperative systemic norms of behavior. Russett (1993:24) makes a similar argument about the spread of democracy: "It may be possible in part to supersede the 'realist' principles (anarchy, the security dilemma of states) that have dominated practice to the exclusion of 'liberal' or 'idealist' ones since at least the seventeenth century."

Hegemonic leadership plays an important role in promoting democratic norms in the international system. Advocates of hegemonic stability theory (e.g. Kindleberger, 1978; Keohane, 1984; Gilpin, 1987; Lake, 1988) claim that cooperation in the international political economy is facilitated by a powerful liberal state (hegemon) that creates and maintains liberal economic institutions and regimes. Also a hegemon aids in the development of a world market economy. (Gilpin, 1987) While scholars have employed numerous definitions of hegemony, most agree that a hegemon is the most powerful state in the international system

that dominates economic and political affairs.[37] Keohane (1984:32) relies on a more specific definition: "Hegemonic powers must have control over raw materials, control over sources of capital, control over markets, and competitive advantages in the production of highly valued goods." Also, in order to be considered a hegemon, a state must be committed to liberal values, especially the rules and norms of a liberal trading order. The most common historical examples of hegemons based on these criteria are Great Britain and the United States.

Hegemons facilitate the growth of democratic norms in several ways. First, they create liberal regimes and institutions whose norms and rules stem from their domestic political processes. A good example is the General Agreement on Tariffs and Trade (GATT), an institution established by the United States in the aftermath of World War II to promote open trade policies. One of the key principles of the GATT is the Most Favored Nation (MFN) policy of "unconditional reciprocity" where concessions made to one member are automatically extended to all other members. (Gilpin, 1987:74) A second way that a hegemon aids in the promotion of democratic values is through its support of open trading policies that allow its goods and services to flow abroad freely. One consequence of such global trade is that the hegemon's domestic cultural values and norms are often transmitted to other states. Deudney and Ikenberry (1991:112), for example, discuss the spread of the American business culture "in which the norms of openness, predictability, and performance prevail" and the American commodity culture "created by globally standardized and mass-marketed products such as blue jeans, Coca Cola, and television." They argue that the spread

[37] The preponderance of military power is another typical characteristic of hegemony (e.g. Organski and Kugler, 1980; Modelski and Thompson, 1988).

of American and Western culture was a significant international factor leading to the breakup of the Soviet Union.

Finally, the hegemon requires support from other major states in the system in order for its leadership to be effective, what Gramsci refers to as "ideological hegemony" (Keohane, 1984:44-45). Gilpin (1987:73) elaborates this point: "other powerful states must also have an interest in the growth of market relations; the hegemon can encourage but cannot compel other powerful states to follow the rules of an open world economy." It is easiest for democratic states to support each other in such a system, due to their common domestic "rule of law" that becomes translated into common norms and rules for the institutions and regimes they establish. The prevalence of these liberal economic institutions globally promotes the spread of the rules and norms underlying their structure, furthering the Kantian international "rule of law".

What types of rules and norms are characteristic of the interactions between democracies, i.e., what types of behavior characterize the international "rule of law" promoted by democracies? In democracies, political conflicts are more likely to be resolved peacefully through compromise and negotiation. In addition, decision-makers are expected to respect "the rights and continued existence of opponents (Russett, 1993:35)." Political success is not achieved through the elimination of political opponents; all parties agree to the nonviolent transfer of power and they rely on compromise to resolve debates over contentious issues.[38] These norms of peaceful conflict resolution prevail when democracies

[38] Dixon (1994) calls this the norm of bounded competition. "All modern democracies are openly competitive systems of governance where conflicting material interests and basic political values routinely clash over the proper course of public action...Just as competition is a constant of democratic governance, so too is the presence of rules, procedures, or guidelines for setting its boundaries (Dixon, 1994:15)." Dixon argues that one of the most important rules of bounded competition is to refrain from

interact with other democracies. Democracies are also more likely to agree to third-party arbitration for dispute resolution (Dixon, 1993, 1994; Raymond, 1994, 1996), and to settle disputes by stalemate or agreement, as opposed to relying on an imposed solution (Russett, 1993:625).

There are several other examples of norms and rules that stem from the international and domestic republican "rule of law". Russett (1993:31) observes that "a norm of equality operates both as voting equality and certain egalitarian rights to human dignity" between democratic states. He argues further that democracies are more likely to uphold the international agreements they sign "because of the visible nature and public costs of breaking commitments[39] (Russett, 1993:137)." Democracies are also more likely to respect and promote human rights internationally, a principle that follows naturally from Kant's noumenal awareness, especially respect for the freedom to be moral. (Deudney and Ikenberry, 1991; Huntley, 1996) Finally, there is some evidence that democracies are less likely to make nationalist or territorial claims outside their boundaries, promoting a norm of respect for the territorial status quo. (Kacowicz, 1995:266)

In conclusion, as the proportion of democracies increases, the rules of engagement between democracies will start to diffuse throughout the international system, particularly if the largest states are liberal democratic regimes. My expectation is that as the proportion of democratic states increases, the level of systemic war will decrease. Also, the pacifying impact of democracy on war should get stronger over time, as more and more states become

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the use of violent force to obtain political goals or advantage over political adversaries.

[39] See also Fearon (1994) and Gaubatz (1996).

democratic and as the rules of the international system shift away from "neorealist" rules towards Kant's republican rule of law.

Testable Propositions

Several propositions can be derived from the theoretical arguments discussed above. The first is the basic democratic peace proposition at the systemic level (P_1), which was derived from Kant's notion of perpetual peace.

> P_1: As the proportion of democracies in the system increases, the proportion of nations fighting war in the international system decreases.

An alternative hypothesis can be derived from previous theoretical work that aggregates findings at the monadic and dyadic levels to the systemic level. I use the Gleditsch and Hegre (1997) model for comparison. If their model is accurate, then the relationship between democracy and war could be positive if the proportion of democracies in the international system is small initially. I test the first proposition against this alternative:

> P_2: Periods of global democratization can be followed by periods of higher or lower systemic conflict, depending on the total number of democracies in the system. If the overall number of democracies is small, the relationship should be positive.

Testing these competing hypotheses provides a nice comparison of a theory of democracy and war developed at the systemic level versus a theory derived logically from findings at other levels of analysis.

Also I expect the impact of democracy to get stronger over time. As the proportion of democracies in the world increases, the domestic "rule of law" that is characteristic of republican forms of government will diffuse throughout the international system, moving us

closer to Kant's international "rule of law", and making the rules and norms of behavior between democracies more prevalent in international relations at large. Thus, the substantive significance of democracy should be increasing historically.

> P_3: The degree of the negative impact of democracy on war in the international system will become stronger over time as the proportion of democracies increases.

A key feature of the systemic theoretical relationship between democracy and war discussed above is that the relationship between these variables is endogenous. More democracy in the system makes for less war, but war also promotes republican forms of government, due to the success of democracies in wars and the improvement in domestic and international institutions that war brings about over time. This reverse causal relationship is tested with the following proposition:

> P_4: An increase in the proportion of nations fighting war in the international system will increase the proportion of democracies.

As the number of democracies grows over time, however, the international "rule of law" will move ever closer to Kant's vision of perpetual peace. Thus the frequency of international conflict should be declining as the system becomes more democratic. Also, the positive influence of war on the creation of more democratic forms of government should decline over time as the incidence of war becomes less frequent and as the federation of free states enlarges.

> P_5: The degree of the positive impact of war on democracy will decrease over time as the proportion of democracies in the international system increases.

Having elaborated the relationship between democracy and war at the systemic level, I turn now to a discussion of three other factors that influence both democracy and war in the international system: power concentration, world trade, and world production.

Power Concentration and Systemic War

Recall that one important source of structural change in the neorealist theoretical model of international relations is the distribution of power in the system. While I have shown that the differentiation of units in the system (especially with regards to their domestic regime type) has a significant influence on the likelihood of systemic war, it is also possible that Waltz's other primary source of structural change, the distribution of capabilities, is important as well. Work on the relationship between the distribution of power and war at the systemic level can be grouped into two broad theoretical approaches: the power preponderance school and the balance of power school.

Both power preponderance and balance of power theorists argue that systemic war is largely determined by the distribution of power between states and the uncertainty associated with the relative position of states and changes in that distribution over time. Uncertainty refers simply to "the difficulty which foreign policy elites experience in discerning the stratification's and clusters in the system, and predicting the behavior of the other members of that system (Singer, et al, 1972:271)." According to Singer, Bremer, and Stuckey (1972), three factors increase the level of uncertainty in the system: 1) an equal distribution of capabilities, 2) a change away from high concentration of power towards a more equal distribution of power, and 3) relatively fast changes in the concentration of

capabilities. Balance of power theorists argue that war in the system is less likely when there is a relatively equal distribution of capabilities between major powers, when power concentration changes towards parity, and under conditions of "a relatively fluid power hierarchy (Singer, et al, 1972:293)", where it is easy for nations to change places in the rank order of states. Power preponderance theory, on the other hand, predicts that war is less likely if the concentration of power in the system is high (concentrated in the hands of very few states), if concentration changes towards greater concentration, and if the rank order of states in terms of power is relatively stable. Singer, Bremer, and Stuckey (1972) find support for the power preponderance model in the 20th century, but find that the balance of power model does a better job of predicting systemic war in the 19th century. Later analyses of power concentration and war (e.g. Doran and Parsons, 1980; Thompson, 1983a, 1983b) find further support for the power preponderance position, i.e., that systemic war is less likely the higher the concentration of global capabilities. Many of these studies also question the inter-century differences in the relationship between power concentration and war uncovered by Singer, Bremer, and Stuckey (1972). I test the following power preponderance proposition.[40]

> P_6: The proportion of nations fighting war in the international system will decrease as the concentration of power in the system increases.

[40] Mansfield (1992, 1994) argues that the relationship between systemic capability concentration and war is nonlinear. He finds empirical support for an inverted U-shape relationship, i.e., "both the highest and lowest levels of concentration may be associated with the lowest incidence of warfare while intermediate levels of concentration may be associated with the highest incidence of warfare (Mansfield, 1992:7)." I do not test this relationship in my analysis, but it would be an interesting avenue for future research.

Trade and Systemic War

I argued earlier that a hegemon facilitates the growth of democratic norms and rules in the international system at large, especially through the liberal trading regimes it establishes and maintains. Through its global trading network, the hegemon promotes greater cooperation and less conflict in the international system, while at the same time transmitting its domestic cultural values and norms to other states. In this sense, increases in the level of hegemonic trade can decrease the frequency of war in the international system by promoting the Kantian international "rule of law". More generally, "economic interdependence reinforces constitutional constraints and liberal norms by creating transnational ties that encourage accommodation rather than conflict. Thus material incentives add their force to law and morality (Oneal, et al, 1996:12)."

Mansfield (1994) provides an alternative theoretical approach, where he also examines the systemic relationship between trade and war.[41] Siding with the commercial liberals, Mansfield (1994) argues that increased trade in the international system makes war less likely. Trade increases dependence between states and "provides a more efficient and less costly means than war for states to gain access to resources and markets (Mansfield, 1994:122)." He points out, however, that the distribution of capabilities also has a strong influence on the likelihood of systemic war in addition to international trade, consistent with the work on interdependence (e.g. Keohane and Nye, 1977, 1987). Mansfield finds strong evidence for a negative relationship between trade and war, i.e., as

[41] As Mansfield (1994) points out, the majority of work on the relationship between trade and conflict has been conducted at the dyadic level. These studies are tangential to the systemic theory developed here, thus I do not include them in my discussion. Good examples of dyadic studies of trade and conflict include Polachek (1980), Gasiorowski and Polachek (1982), Gasiorowski (1986), Pollins (1989a, 1989b), Barbieri (1996), Oneal, et al (1996), and Oneal and Russett (1997).

the level of world trade increases, the amount of war in the international system declines. I test this proposition:

> P_7: The higher the level of trade in the international system, the lower the proportion of nations fighting war.

Production and Global Democracy

Thus far I have focused on only one factor that promotes the spread of democracy globally, war. Other factors may also influence the processes of democratization in the international system. Much of the work in comparative politics has focused on domestic political and economic factors conducive to the development of democracy. (e.g. O'Donnell, et al, 1986) In his analysis of the "third wave" of democratization, Huntington (1991) identifies a few global or regional influences on the spread of democracy, in addition to numerous domestic factors that promote democratization. These include experience as a British colony, occupation by a prodemocratic foreign power, influence by a prodemocratic foreign power, and elite desire to emulate democratic nations, As Ray notes,

> Huntington himself (1991:45-46) posits that the most recent...wave of democratization in the global system was a result of (1) legitimacy problems of authoritarian systems on the global level, (2) global economic growth, (3) changes in the policies of the Catholic Church, (4) changes in the policies of the European Community, the U.S., and the Soviet Union, and (5) snowballing or demonstration effects from the earlier democratizers of this time period. All of these factors are basically external to the states being analyzed. (Ray, 1995:51-52)

I focus here on the impact of global economic growth on the development of democracy in the international system. I expect higher levels of economic production in

the system to be associated with greater levels of democracy. I test the following proposition:

> P_8: Increases in world production will increase the proportion of democracies in the international system.

Conclusion

The theory developed in this chapter makes several contributions to the existing literature on the democratic peace. First, like Kant, I argue that democracy and war are endogenously related to each other over time. War creates conditions that favor the development of republican constitutions and a rule of law among nations, while peaceful relations between democracies creates greater peace and furthers the spread of democracy and democratic norms in the international system. "The perfected republic is then a consequence as much as a condition of peace—a dependent as much as an independent variable (Huntley, 1996:59)." A vast majority of studies on the democratic peace study only the impact of democracy on war, without considering how war affects the development of democracy.[42]

My approach is also unique because I model the relationship between democracy and war *dynamically*. It is typical in international relations research to assume that a single model explains the relationship between the variables of interest over time. To be true to Kant's ideas, cultural theories of the democratic peace should take into account the evolving relationship between democracy and war. I demonstrate that the systemic component of Kant's theory predicts an increasing (negative) impact of democracy on war in the system,

[42] I show clearly in Appendix A that the parameter estimates in the estimation of a single equation are biased if the true theoretical relationship between two variables is endogenous.

whereas the (positive) impact of war on democracy should be getting weaker as the system moves closer to Kant's vision of perpetual peace.

The third primary contribution of my theoretical approach is the added emphasis on rules and norms of behavior in the international system, particularly how these are evolving as a consequence of the dynamic relationship between democracy and war. Other scholars have discussed the potential influence of the spread of democracy on the norms and rules of behavior in the international system. For example, Bruce Russett (1993) concludes his book, *Grasping the Democratic Peace*, with the following observation.

> Perhaps major features of the international system can be socially constructed from the bottom up: that is, norms and rules of behavior internationally can become extensions of the norms and rules of domestic political behavior...if enough states become stably democratic in the 1990's, then there emerges a chance to reconstruct the norms and rules of the international order to reflect those of democracies in a majority of interactions. (Russett, 1993:137-138)

I have demonstrated that this evolution towards systemic democratic norms and rules stems from the dynamic and endogenous relationship between democracy and war over time.

Finally, the theory is developed at the systemic level going beyond previous tendencies to aggregate empirical findings from the monadic and dyadic levels of analysis to the systemic level. Given that the empirical results on the democratic peace proposition at the monadic level are debatable, a theory developed at the systemic level is preferred to a systemic result derived from aggregation across levels.

In the next chapter, I describe the operational measures used to test the propositions derived from my systemic theory of the democratic peace. I test these propositions in Chapters four and five with structural equation and sliding window estimation.

CHAPTER 3

GATHERING EVIDENCE

In this chapter, I provide a detailed description of the operational measures used in the statistical analysis in Chapters four and five. I also present the time series plots, descriptive statistics, and Augmented Dickey Fuller (ADF) tests for each variable. The present study's propositions are tested with annual systemic data from 1816-1988.[1] The data used to test my theory is derived from several data sets. Table 4 contains a summary of each variable and its source and Table 5 presents the summary statistics for each variable.

Endogenous Variables

The two endogenous time series variables analyzed in this study are the level of systemic war and the level of global democracy. Measuring these two series is challenging at the systemic level because they both depend to some degree on the total number of states in the system. To minimize this problem, I adopt proportional measures of war and

[1] In future research, I plan to extend the temporal domain. My time series end in 1988 due to the lack of availability of two economic series (from the sources used), US Gross National Product and British Exports. Also, the Correlates of War national capability data, the source for the measure of power concentration, ends in 1991.

democracy in the system that control for the total number of nations in the international system per year.[44]

Systemic War

The level of war in the international system is measured as the total number of Correlates of War interstate war participants per year divided by the total number of system members (Propwar). The COW project classifies a nation as a member of the interstate system if 1) its population exceeds 500,000 and it receives diplomats from any two major powers,[45] or 2) the nation is a member of the League of Nations or the United Nations any time in its existence (Small and Singer, 1982:41). A COW interstate war is any violent conflict fought between two or more system members that exceeds a minimum battle death threshold of 1000. A nation is counted as a participant in a war if it either incurs 100 battle deaths, or it commits at least 1000 armed personnel to active combat (Small and Singer, 1982:55).

I begin by plotting the first endogenous variable in this study, the proportion of system members fighting interstate wars (Propwar), in Figure 1. The autocorrelation and partial autocorrelation functions for this time series are plotted in Figures 2 and 3. The autocorrelation function (ACF) of a time series, y_t, is the covariance of y_t and subsequent values of y_{t+k} divided by the variance of y_t:

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[44] Raknerud and Hegre (1997:7) discuss the impact of increasing numbers of states in the system on dyadic level analysis of the democratic peace proposition. They demonstrate that the "probabilities at the *dyadic level* must depend on the size of the system...if the war probabilities in each dyad-year are constant, the probability of war on the national level approaches one as N increases."

[45] The Correlates of War project (Small and Singer, 1982:47-50) identifies nine major powers from 1816-1988 (US 1899-1988, UK 1816-1988, France 1816-1940, 1945-1988, Germany/Prussia 1816-1918, 1925-1945, Austria-Hungary 1816-1918, Italy 1860-1943, USSR 1816-1917, 1922-1988, China 1950-

$$\rho_k = \frac{E\left[(Y_t - \mu)(Y_{t-k} - \mu)\right]}{Var(Y_t)}$$

Each ρ_k falls between -1 and +1. (Judge, et al, 1980:227) Each spike in the partial autocorrelation function represents the partial derivative for each y_{t-k} with respect to y_t. In other words, each value in the PACF corresponds to the regression coefficients (λ's) for the following equation:

$$Y_t = \lambda_1 Y_{t-1} + \lambda_2 Y_{t-2} + \ldots + \lambda_k Y_{t-k} + \varepsilon_t$$

As expected, the proportion of system members fighting wars is highest during the Seven Weeks War, World War I, World War II, and the Korean War. Examination of the ACF and PACF functions indicates that the measure of systemic war (Propwar) is stationary, i.e., the sample moments such as the mean and variance are invariant with respect to time.[46]

Systemic Democracy

The other endogenous variable, systemic democracy, is more difficult to measure due to the wide variety of conceptualizations and measurements of democracy in the international relations and comparative politics literature. The three dominant sources for empirical measures of democracy in the international relations literature include: Polity III (Jaggers and Gurr, 1995; Gurr, Jaggers, and Moore 1990), the Freedom House Indicator

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1988, Japan 1895-1945).

[46] I present the results of a more formal test for stationarity, the Augmented Dickey-Fuller test, later in this chapter.

(Gastil 1990), and Doyle's (1986) dichotomous measure of democracy. Numerous scholars have created separate indices with these data sets including Rummel (1983), Chan (1984), Weede (1984), Maoz and Abdolali (1989), Bremer (1992), and Maoz and Russett (1993).

The systemic theory developed in Chapter 2 is derived largely from Kant's theory of perpetual peace between republics. Doyle's (1986) empirical measure of "liberal regimes" comes the closest to Kant's definition of a republican form of government. Doyle (1986:1164) identifies democratic states on the basis of four institutional features that Kant considered fundamental characteristics of republican governments: 1) market and private property economies, 2) external sovereignty, 3) juridical rights for citizens, and 4) "republican" representative government (republican or parliamentary monarchy). I created a measure of the proportion of democracies (Doyledem) by dividing the number of "liberal regimes" per year by the total number of Correlates of War system members. This measure, which covers the time period 1816-1982, is plotted in Figure 4.

I also analyze an alternative measure of democracy using the Polity III data set. A large portion of the empirical work in the democratic peace literature adopts the Polity III ordinal measure of democracy, thus including it provides both a comparison to previous analyses and an alternative conceptualization of democracy. In addition, the Polity III data set covers a longer time period (1800-1994) than Doyle's measure of democracy (1800-1982).). The Polity III project created an ordinal measure of democracy that combines information from several institutional characteristics of a polity: the competitiveness of political participation, the level of constraints on the chief executive, and the openness and competitiveness of chief executive recruitment. (Jaggers and Gurr, 1995:471) This

measure of democracy is based primarily on institutional features of democracy, and it has been used frequently to test the structural theory of the democratic peace.

Using the Polity III data, I define a democracy as any nation whose democracy score is greater than five.[47] For each year, I divide the number of democracies in the system by the total number of Correlates of War system members to produce a second measure of the proportion of democracies in the system (Politydem). Any countries whose democracy scores are missing or who are not system members according to the Singer and Small (1982) criteria are excluded from the proportional calculation. This measure of the proportion of democracies is plotted in Figure 4 along with the indicator derived from Doyle's list of liberal regimes.

The most interesting thing to note is the similarity between the measures, even though the conceptualizations of democracy in the two data sets are quite different. Also, there is a slight upward trend in both series over time, indicating the growth of democracy in the international system over time. The Pearson product moment correlation between these measures is fairly high (r=.939). The autocorrelation and partial autocorrelation functions for these two systemic democracy measures are plotted in Figures 5-8. Both series have strong persistence in the autocorrelation function, indicating that the series could be nonstationary.

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[47] Some scholars utilize a more stringent definition of democracy. The cutoff value of six makes sense in the present study because 1) a lower threshold is probably more appropriate for analysis in the 19th century and 2) a value of six is more likely to capture any changes towards democracy after war which might be precluded by a more stringent criteria. I also tested the second model in Chapter 4 using a Polity III democracy threshold of nine, and the results are similar to those reported here.

Exogenous Variables

The focus in this study is on the endogenous relationship between democracy and war. As I noted in Chapter 2, I also examine the impact of three additional variables on democracy and war: systemic capability concentration, systemic trade, and world production. I describe how each of these variables is measured in the sections that follow.

Systemic Capability Concentration

The indicator of systemic capability concentration in the international system employed is similar to the concentration measure developed by Singer and Ray (1972), and analyzed in many studies including Singer, Bremer, and Stuckey (1972) and Mansfield (1992, 1994). The capability concentration measure in these studies is computed on the basis of each major power's share (S_i) of total composite capabilities in the international system.[48] Concentration (Concen) is measured as:

$$Concen = \sqrt{\frac{\sum_{i=1}^{N}(S_i)^2 - \frac{1}{N}}{1 - \frac{1}{N}}}$$

The number of major powers in the system is denoted as N, and S_i refers to each nation's percentage share of total composite capabilities. While many previous scholars analyze only five-year aggregate measures of concentration, I compute the capability concentration in the system for each year from 1816-1988.

[48] Composite capabilities are calculated by summing a major power's values for military personnel, military spending, total population, urban population, energy consumption, and iron and steel production (COW National Material Capabilities Data). I adopt the same criteria for major power status as the

The systemic capability concentration measure (Concen) is plotted in Figure 9 and the ACF and PACF are plotted in Figures 10 and 11. The concentration of power among major powers has increased over time, which is indicated by the persistence in the autocorrelation function (Figure 10).

Systemic Trade

I measure the level of systemic trade as the total amount of annual British exports per year (Mitchell, 1988). Given that the hegemon serves to promote democratic norms, it makes sense to rely on British data. Also, British exports are highly correlated with general measures of world exports such as Goldstein's (1988) general indicator of world trade.[49] I take the natural log of the British export series in order to account for increasing variance in the series over time; the logged data is plotted in Figure 12 and the ACF and PACF are plotted in Figures 13 and 14.

As is common with most economic series, British exports show an increasing trend over time. This can be seen both in the time series plot (Figure 12) and in the persistence present in the autocorrelation function (Figure 13).

World Production

The final exogenous variable analyzed in this study is the level of world production. I argued that the level of democracy in the system is positively related to the

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Correlates of War project (Small and Singer, 1982:47-50); see list above.

[49] The Pearson bivariate correlation between world exports (Goldstein, 1988) and British exports from 1816-1975 is 0.953. The correlation between the natural log of these two measures is also high (r = 0.933).

level of production in the system. I measure systemic production using the annual measure of U.S. Gross National Product. This correlates highly with more general measures of world production (Goldstein, 1988).[50] The series is logged in order to account for increasing variance over time. The logged series is presented in Figure 14, and the ACF and PACF are plotted in Figures 15 and 16. Like systemic trade, world production is also nonstationary, with an increasing mean over time. This can be seen in the raw data plot and in the persistence of the spikes in the autocorrelation function.

The Issue of Stationarity

The first step involved in any time series analysis is to determine the integrated order of each series to ensure that the data are stationary and that each equation is balanced (i.e., both sides of an equation are I(0)). A stochastic process is stationary if the sample moments such as the mean and variance are invariant with respect to time. An example of nonstationarity in time series data is an upward trending series that is characterized by an increasing mean over time. Inferences made from models with nonstationary data are usually invalid due to an increase in variance as the sample size increases.[51]

I utilize Augmented Dickey Fuller (ADF) unit root tests to determine the integrated order of each variable. A variable is said to be integrated of order *d*, or I(*d*), where *d* refers

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[50] The Pearson bivariate correlation between world industrial production (Goldstein, 1988) and US Gross National Product from 1816-1975 is 0.976. The correlation between the natural log of these two measures is also high ($r = 0.988$).

[51] One is also more likely to encounter a spurious regression problem when two (or more) upward-trending series are regressed on each other. Thus we will tend to find significant relationships between two nonstationary variables, "even if the only thing they have in common is the upward trend. In fact, the R^2 for a regression of y_t on x_t and a constant will tend to unity as $n \rightarrow \infty$ whenever both series can be characterized by (nonstationarity)...even if there is no correlation at all between the stochastic part of y_t and x_t." (Davidson & MacKinnon, 1993:671) The basic result is that we are unable to make valid inferences from models that

to the number of times a series must be differenced to become stationary. The ADF test is a more formal method for determining if a series is nonstationary, as opposed to examination of the ACF and PACF plots that I discussed above. The augmented version of the Dickey-Fuller test accounts for the possible presence of serial correlation. The null hypothesis for the ADF test is that γ equals zero in the following model:

$$\Delta y_t = \mu + \gamma y_{t-1} + \Sigma \phi_j \Delta y_{t-j} + \varepsilon_t$$

Rejection of the null hypothesis implies that y_t is stationary, or I(0). A failure to reject the null indicates the presence of a unit root, or that Δy_t is stationary. Table 6 summarizes the results of the Augmented Dickey-Fuller tests and the transformations necessary to achieve stationarity for each variable analyzed.[52] Each time series that contains a unit root is first differenced, which is true for every variable except the proportion of system members fighting interstate wars (Propwar).

Conclusion

In this chapter, I discussed the operationalization of each key concept in my theoretical model. I presented the basic descriptive time series plots for each series and I also presented the results of Augmented Dickey-Fuller tests for the presence of unit roots. I first differenced any variables that contained a unit root; these transformed series will be employed in the structural equation estimation in Chapter 4.

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use nonstationary data. Even in cases where we find significant results, they may be artifacts of the nonstochastic properties of the series.

[52] The ADF tests are run with two lags of Δy_{t-j}.

Table 4 - Operationalization of Theoretical Concepts

Concept	Variable/Measurement	Sources
Systemic War	Annual proportion of system members fighting interstate wars (Propwar)	Correlates of War Interstate War Data, System Membership Data
Democracy	Annual proportion of democracies relative to total number of system members (Doyledem, Politydem)	Doyle (1986) Jaggers and Gurr (1995) (Polity III)
Systemic Trade	Annual British exports (logged) (Lnukexp)	Mitchell (1988)
World Production	Annual US Gross National Product (Lnusgnp)	Mitchell (1988)
Systemic Capability Concentration	Annual major power capability concentration score (ranging from 0-1) (Concen)	Singer and Ray (1972) Singer, Bremer, and Stuckey (1972)

Table 5 – Summary Statistics

Variable	N	Years	Mean	Median	Standard Deviation	Minimum	Maximum
Propwar	173	1816-1988	0.0640	0.0452	0.0884	0.0000	0.4600
Doyledem	167	1816-1982	0.2642	0.2830	0.0958	0.0769	0.4270
Politydem	173	1816-1988	0.2693	0.3030	0.1287	0.0345	0.5217
Concen	173	1816-1988	0.3139	0.2669	0.1153	0.1300	0.8000
Lnukexp	173	1816-1988	6.1360	5.6733	2.0090	3.4700	11.310
Lnusgnp	173	1816-1988	10.326	9.9804	2.4780	6.4100	15.400

Table 6 - Summary of the Integrated Order and Transformations for each Series

Variable	Integrated Order	Transformation
Proportion of system members fighting interstate wars (Propwar)	I(0)	None
Proportion of democracies in the international system (Doyledem)	I(1)	First Difference (ΔDoyledem)
Proportion of democracies in the international system (Politydem)	I(1)	First Difference (ΔPolitydem)
Systemic major power capability concentration (Concen)	I(1)	First Difference (ΔConcen)
Natural log of British Exports (Lnukexp)	I(1)	First Difference (ΔLnukexp)
Natural log of US Gross National Product (Lnusgnp)	I(1)	First Difference (ΔLnusgnp)

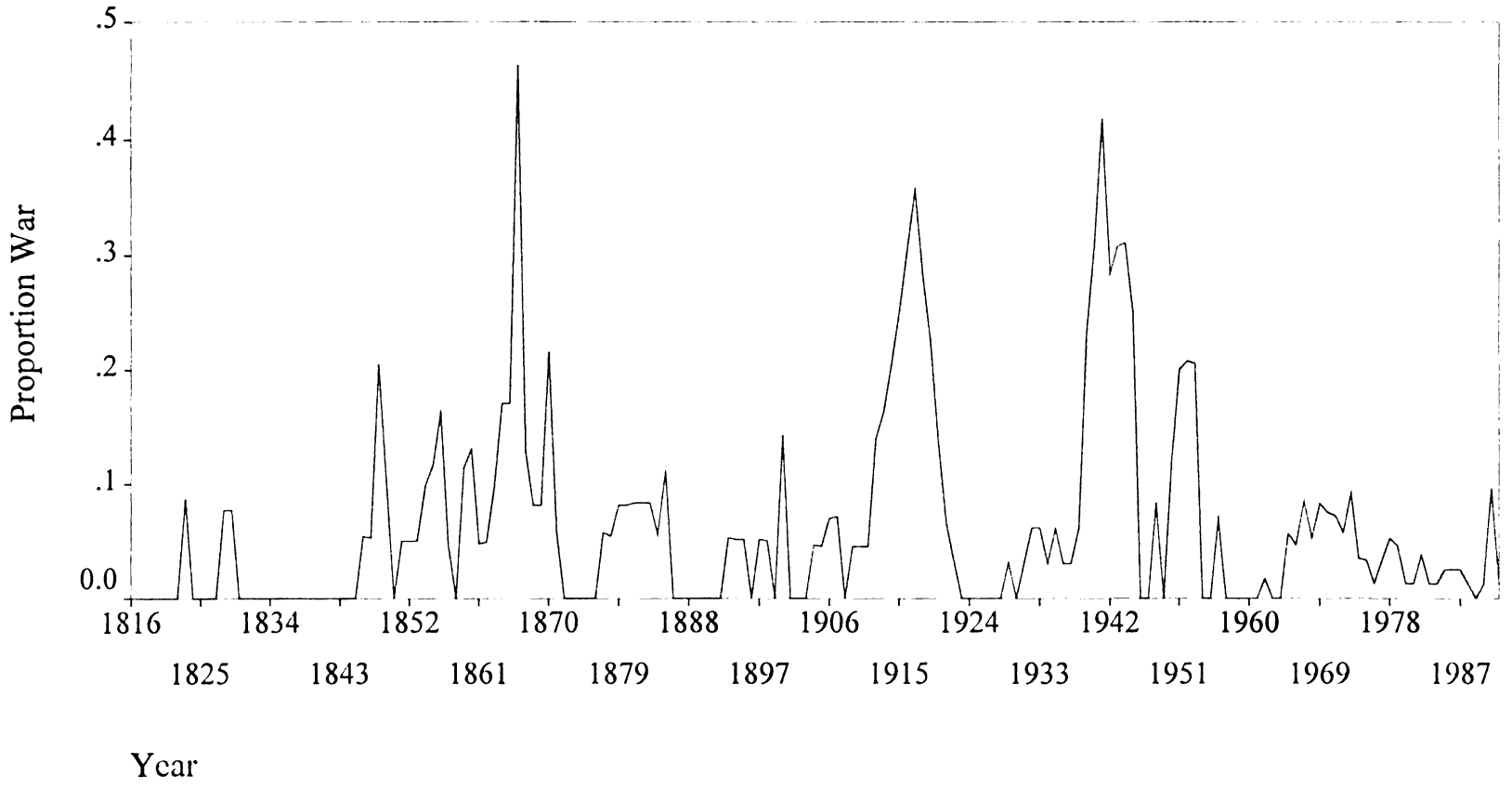

Figure 1

The Proportion of System Members Fighting Interstate Wars, 1816-1992

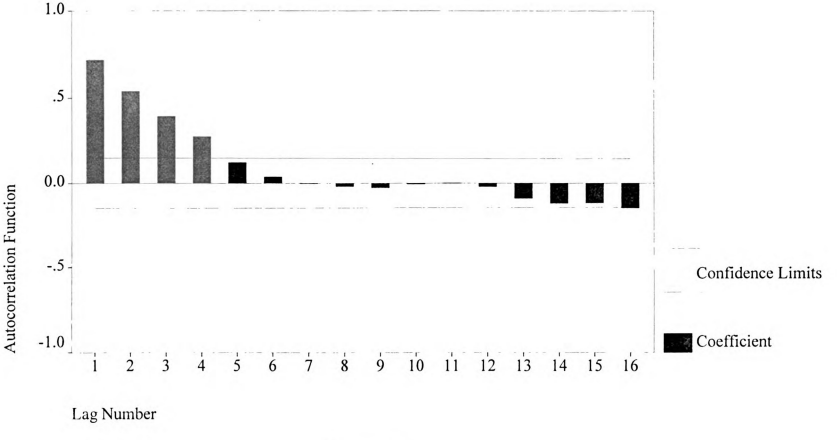

Figure 2

ACF of the Proportion of System Members Fighting Interstate Wars

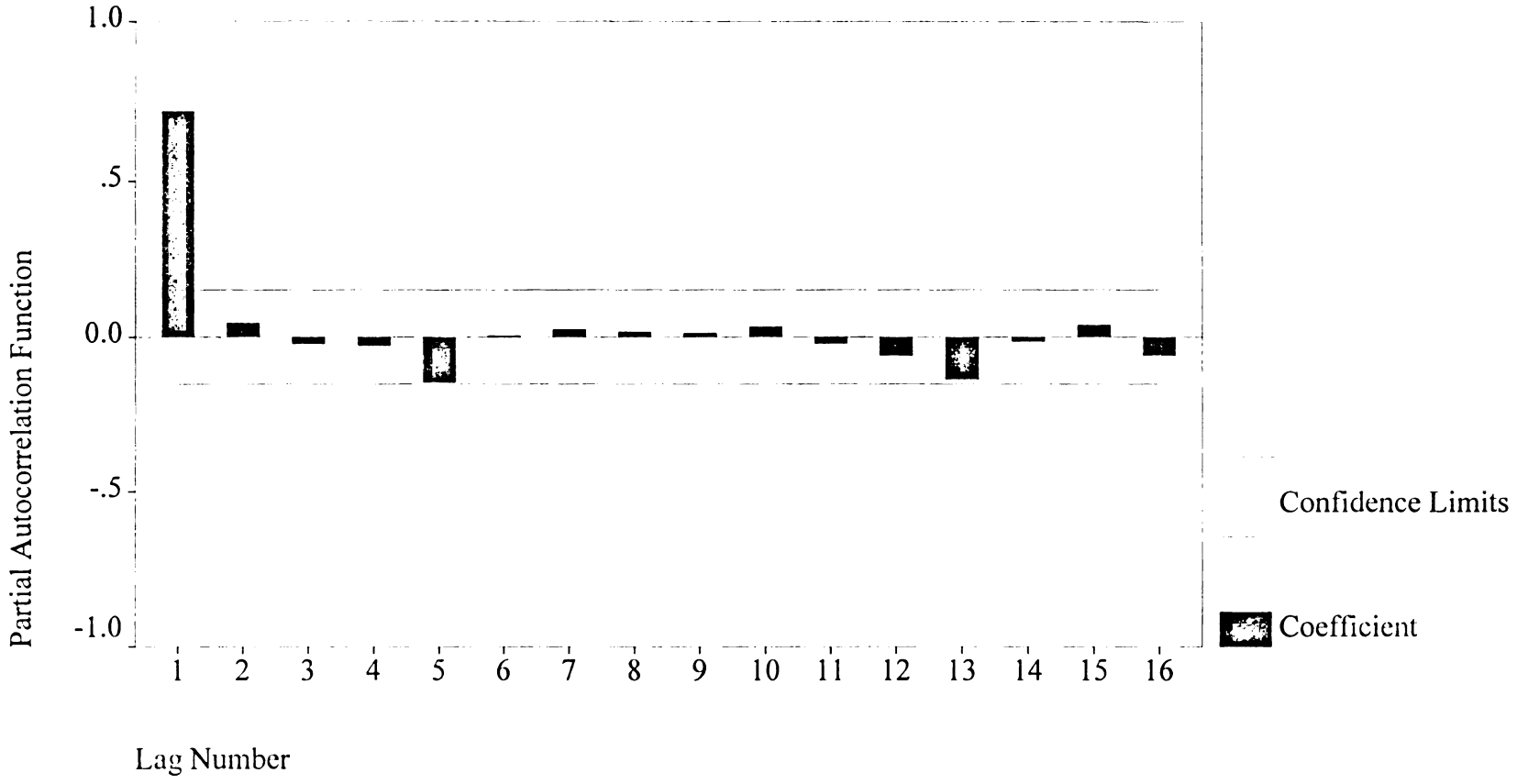

Figure 3

PACF of the Proportion of System Members Fighting Interstate Wars

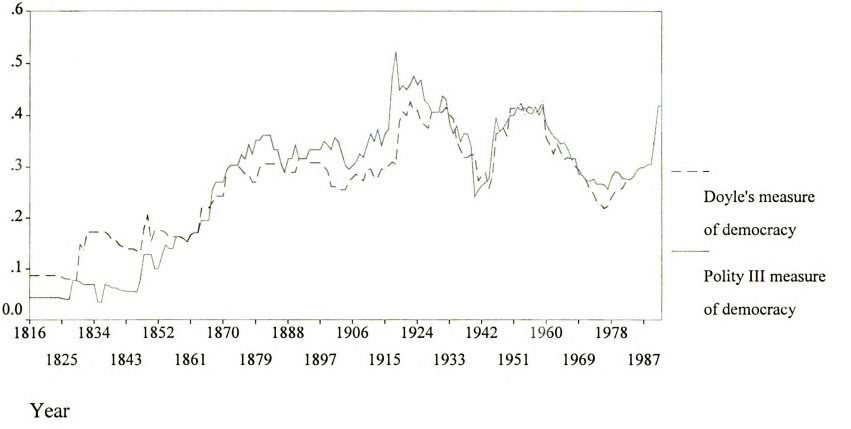

Figure 4

The Proportion of Democracies in the International System, 1816-1992

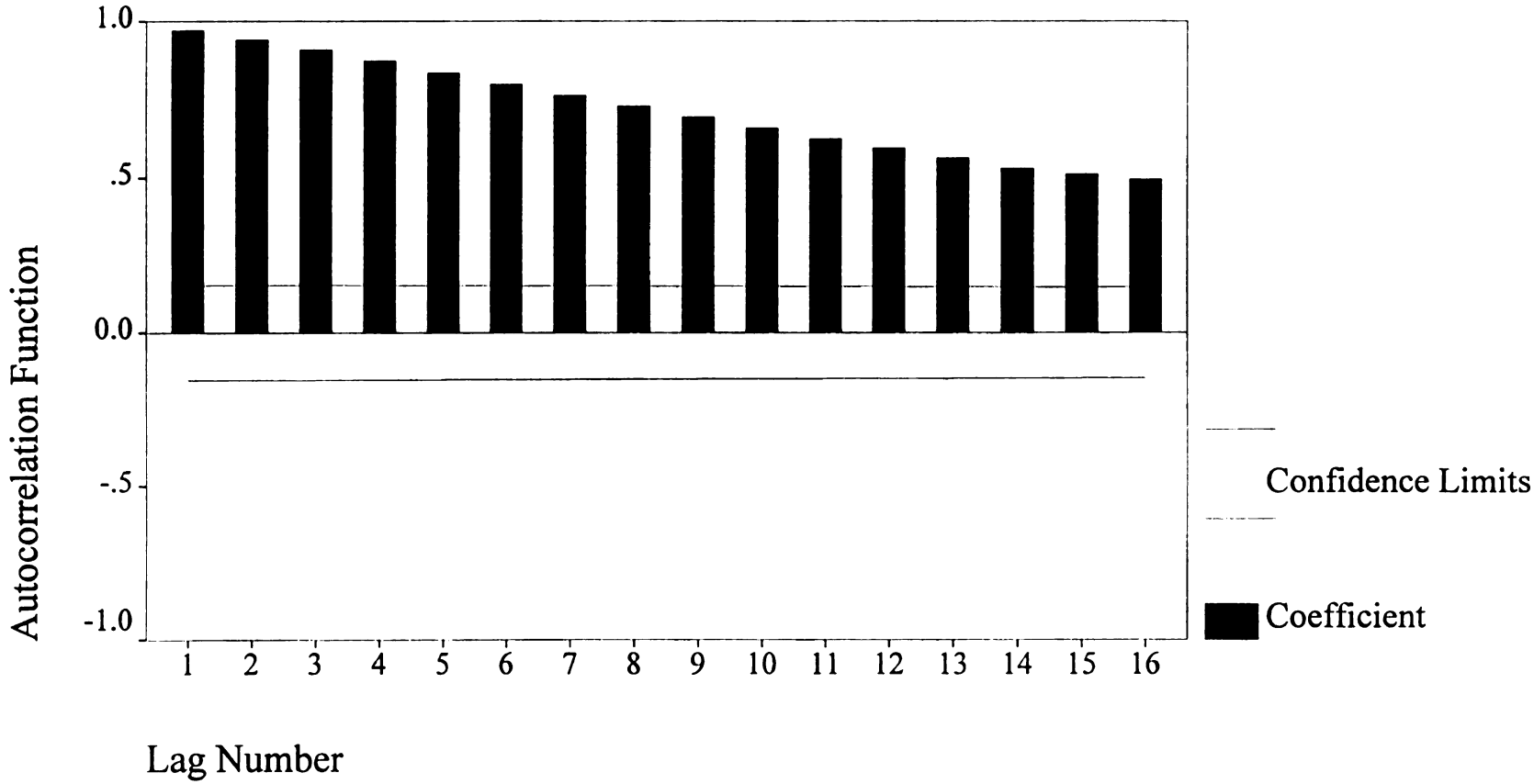

Figure 5

ACF of the Proportion of Democracies (Doyles's Measure)

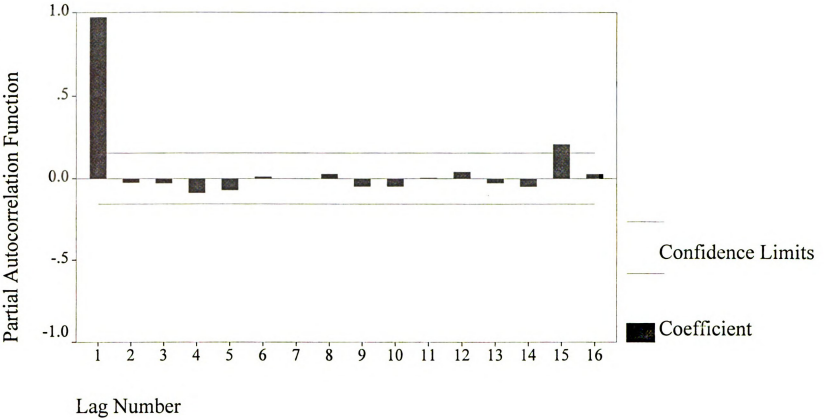

Figure 6

PACF of the Proportion of Democracies (Doyle's measure)

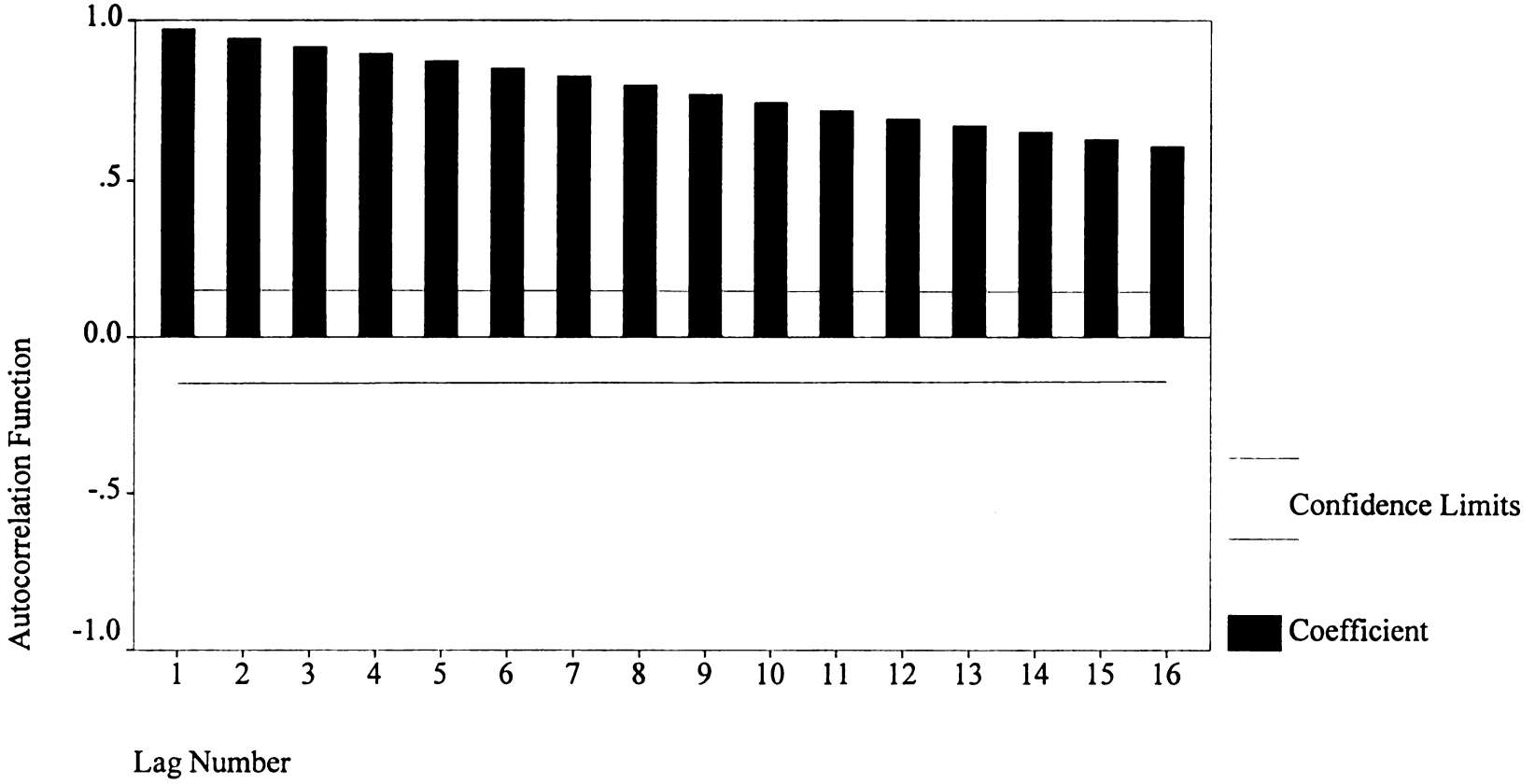

Figure 7

ACF of Proportion of Democracies (Polity III Measure)

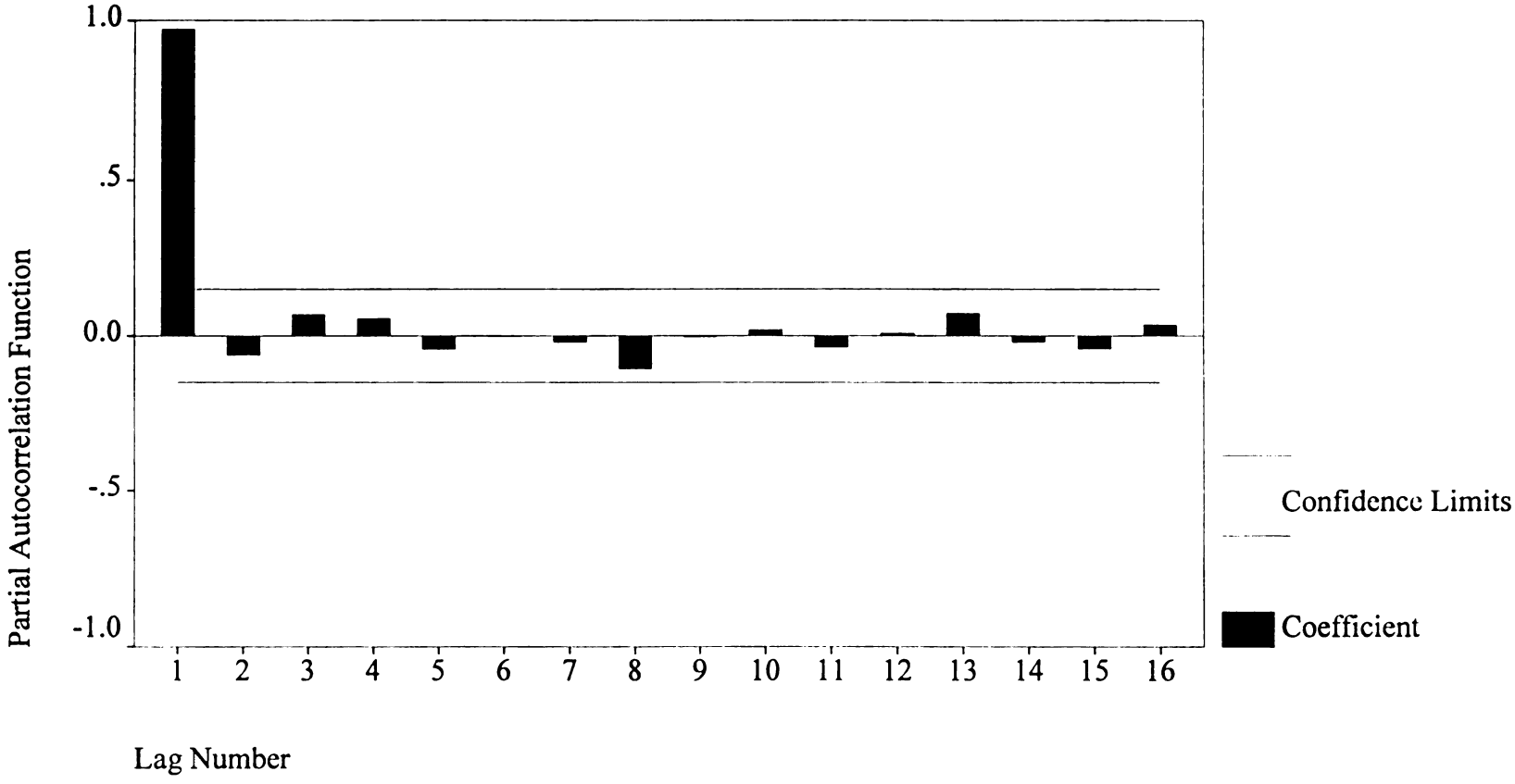

Figure 8

PACF of the Proportion of Democracies (Polity III Measure)

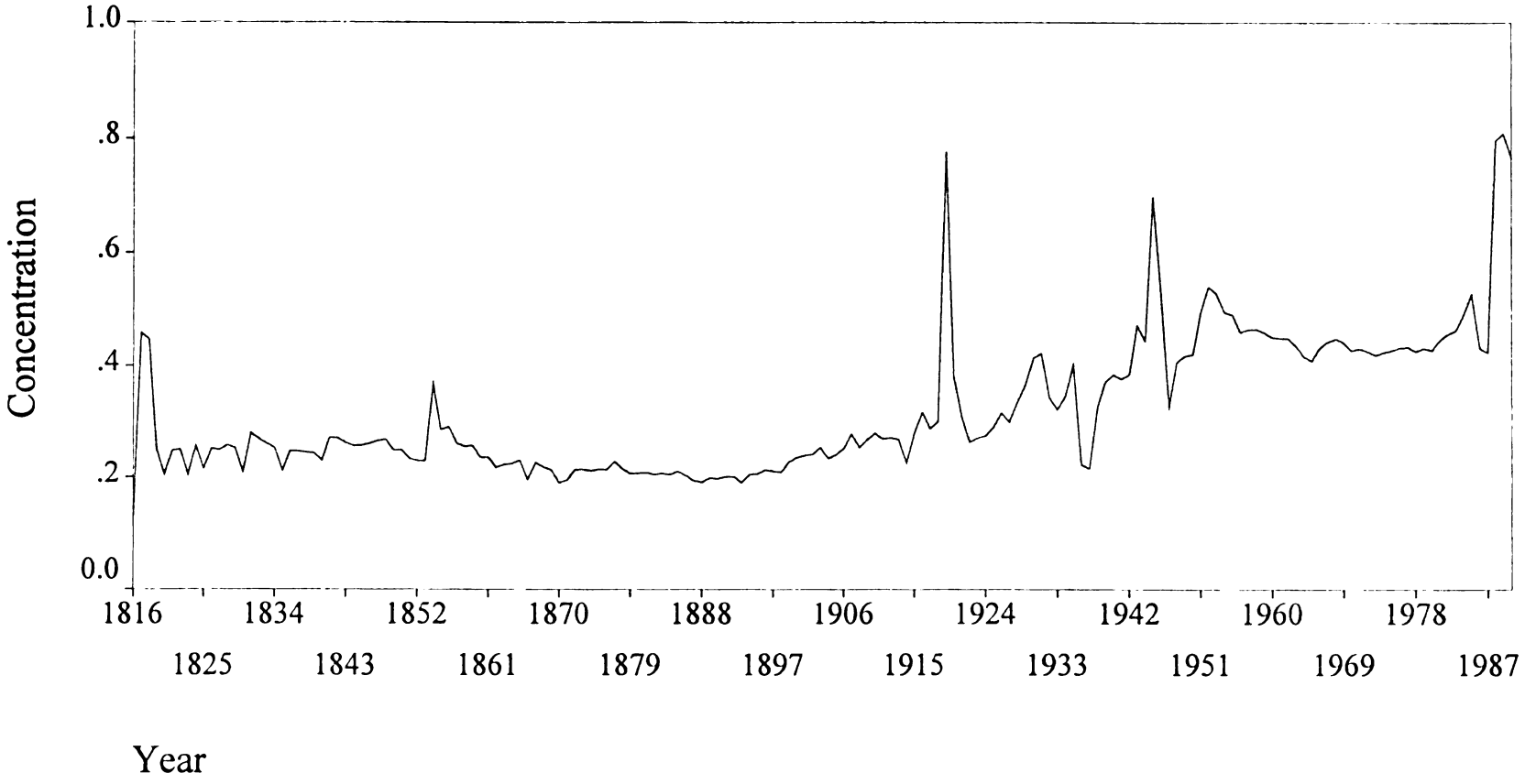

Figure 9

Major Power Capability Concentration, 1816-1990

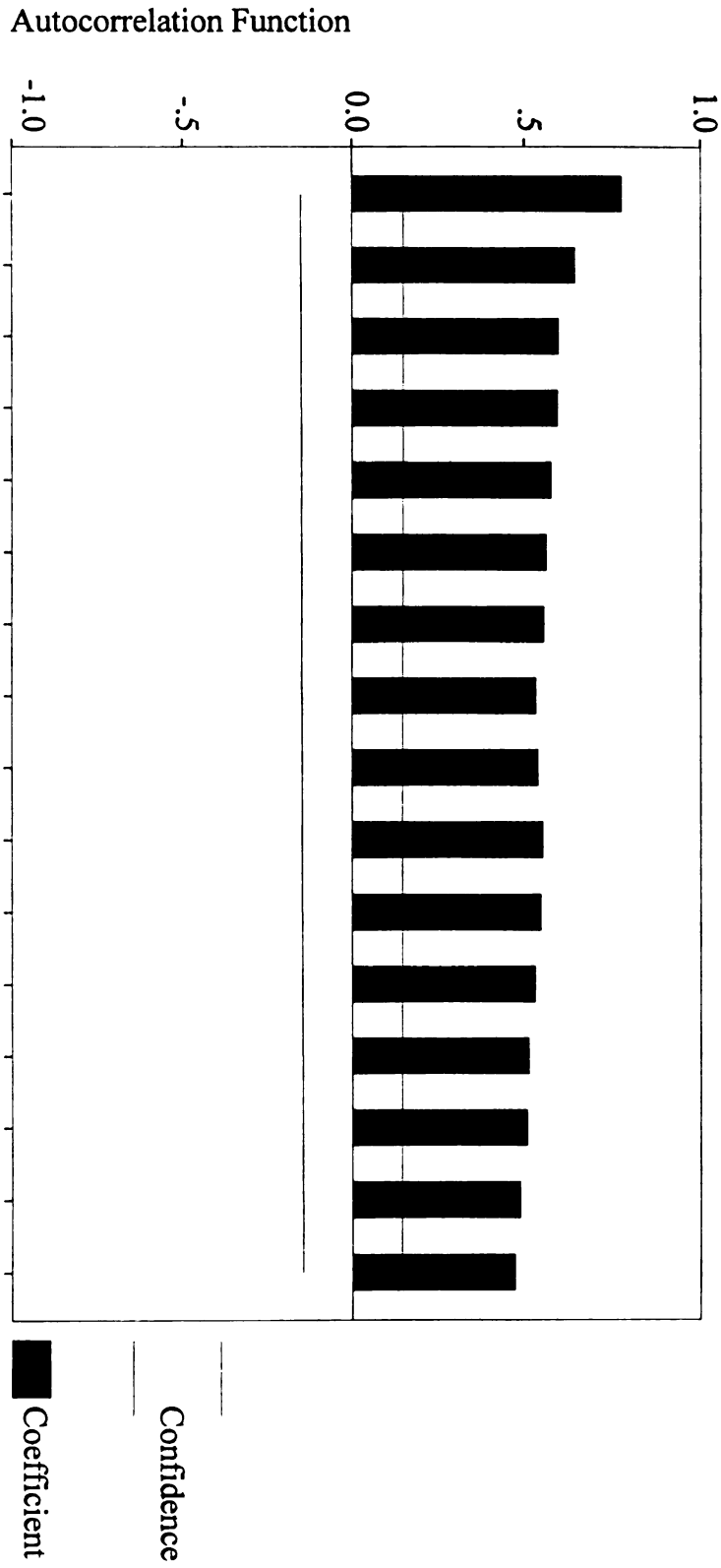

Figure 10

ACF of Major Power Capability Concentration

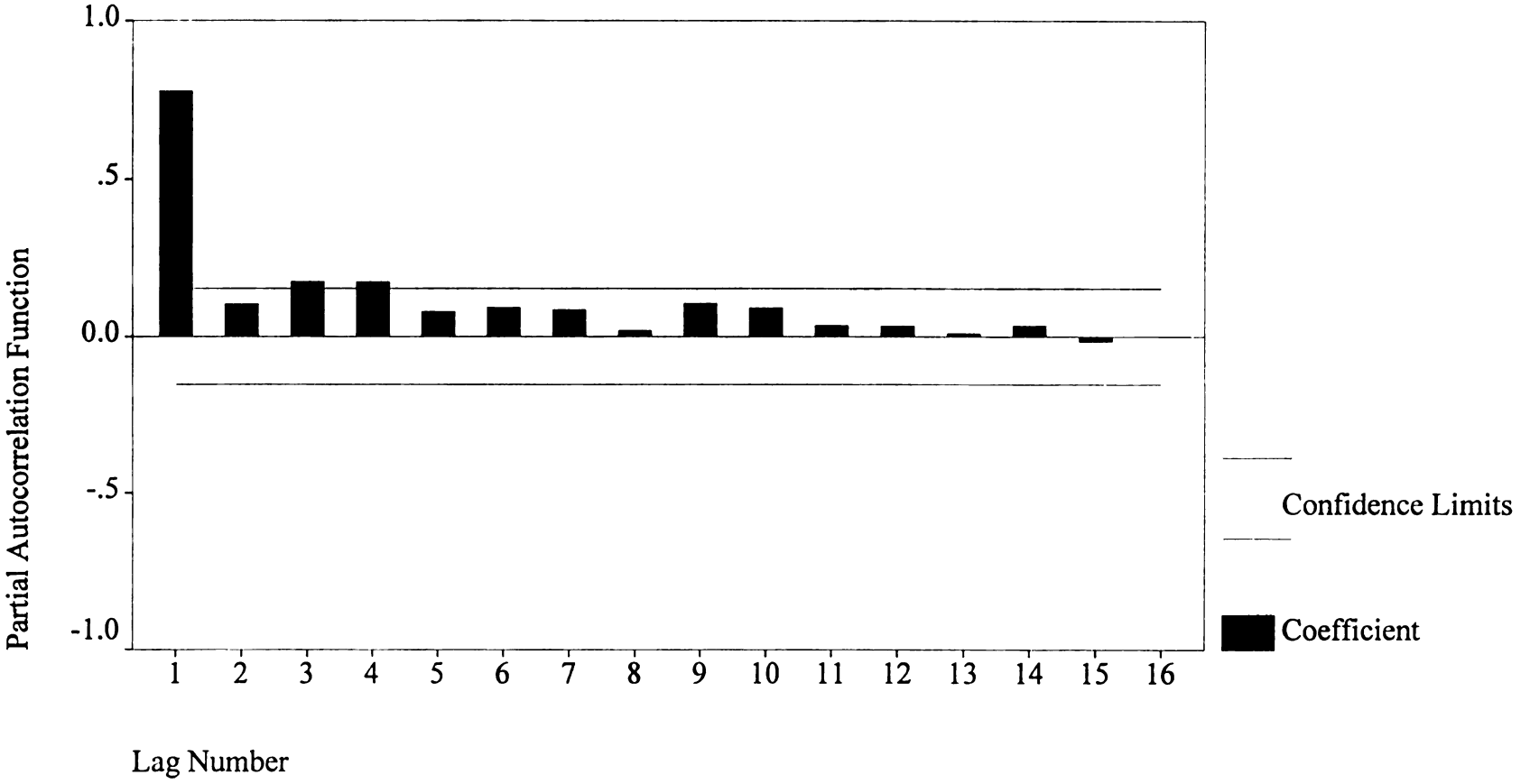

Figure 11

PACF of Major Power Capability Concentration

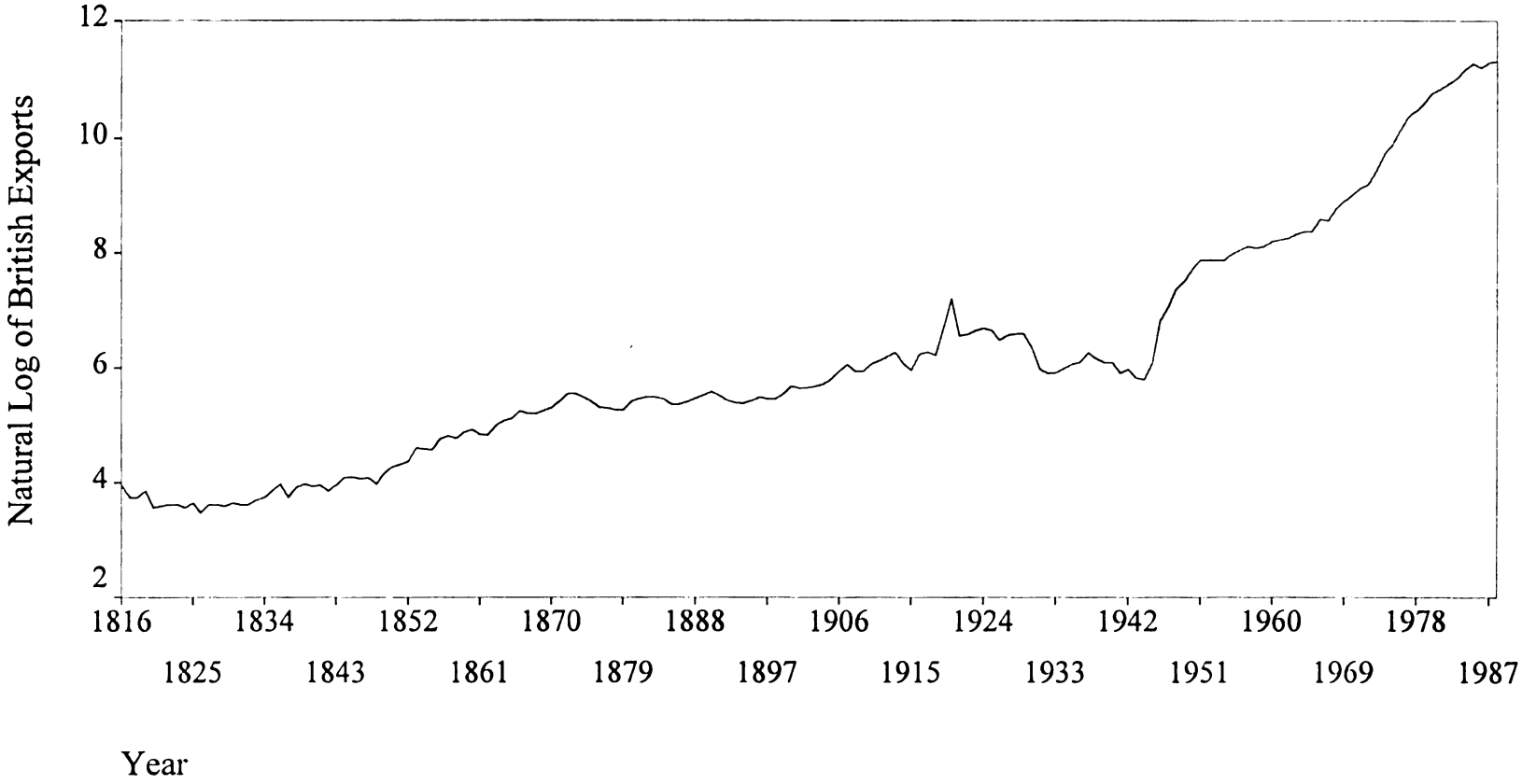

Figure 12

British Exports (logged), 1816-1988

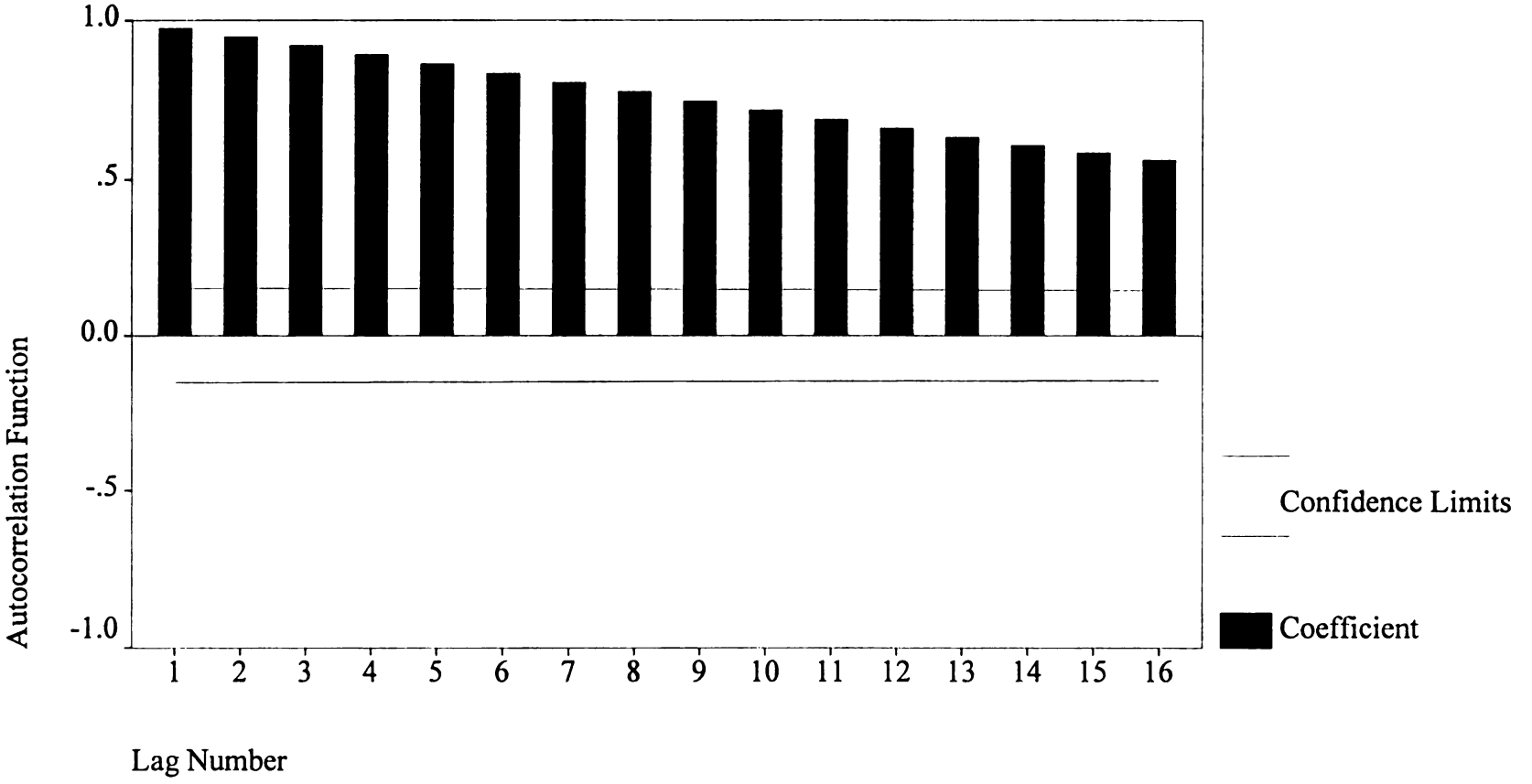

Figure 13

ACF of British Exports (logged)

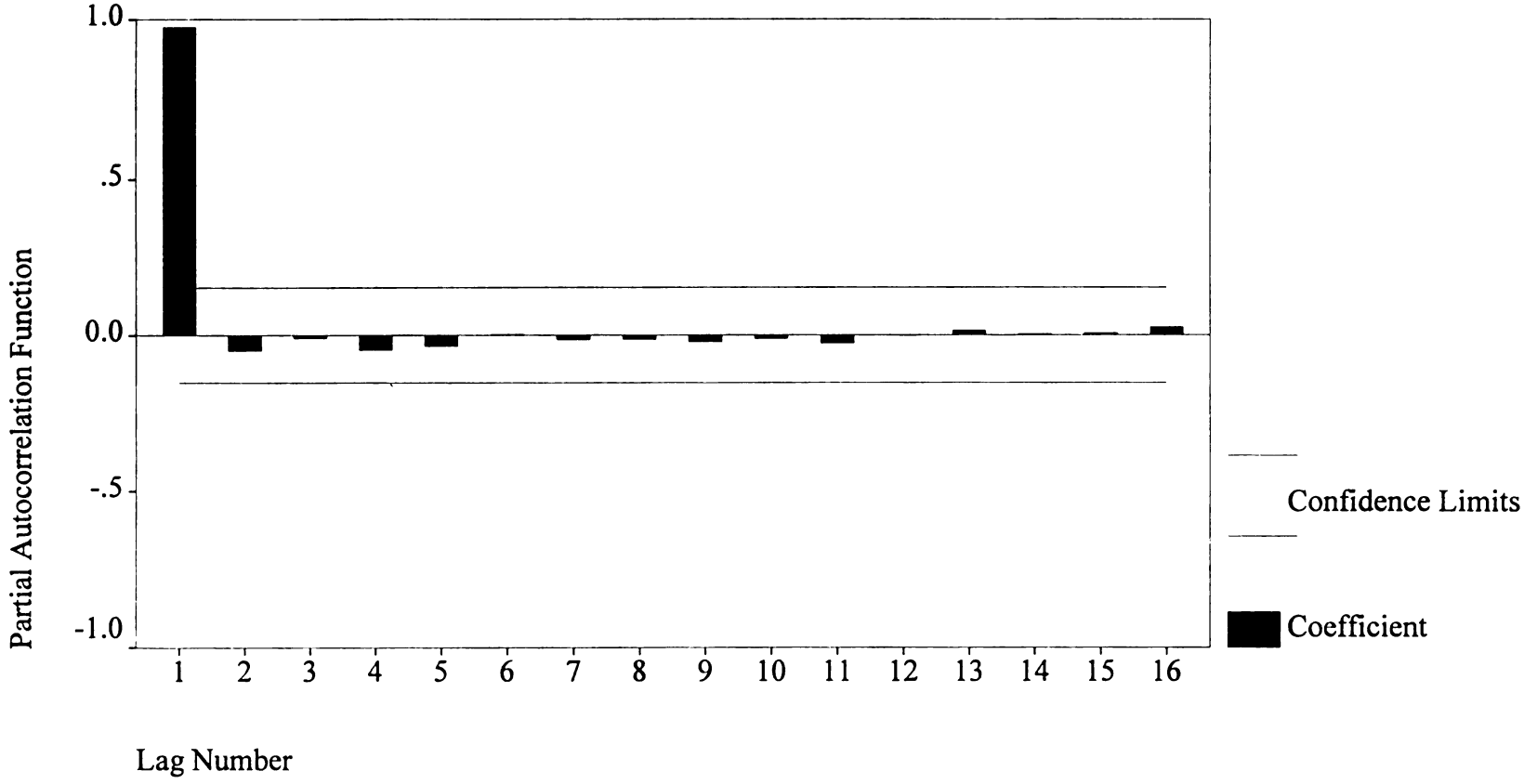

Figure 14

PACF of British Exports (logged)

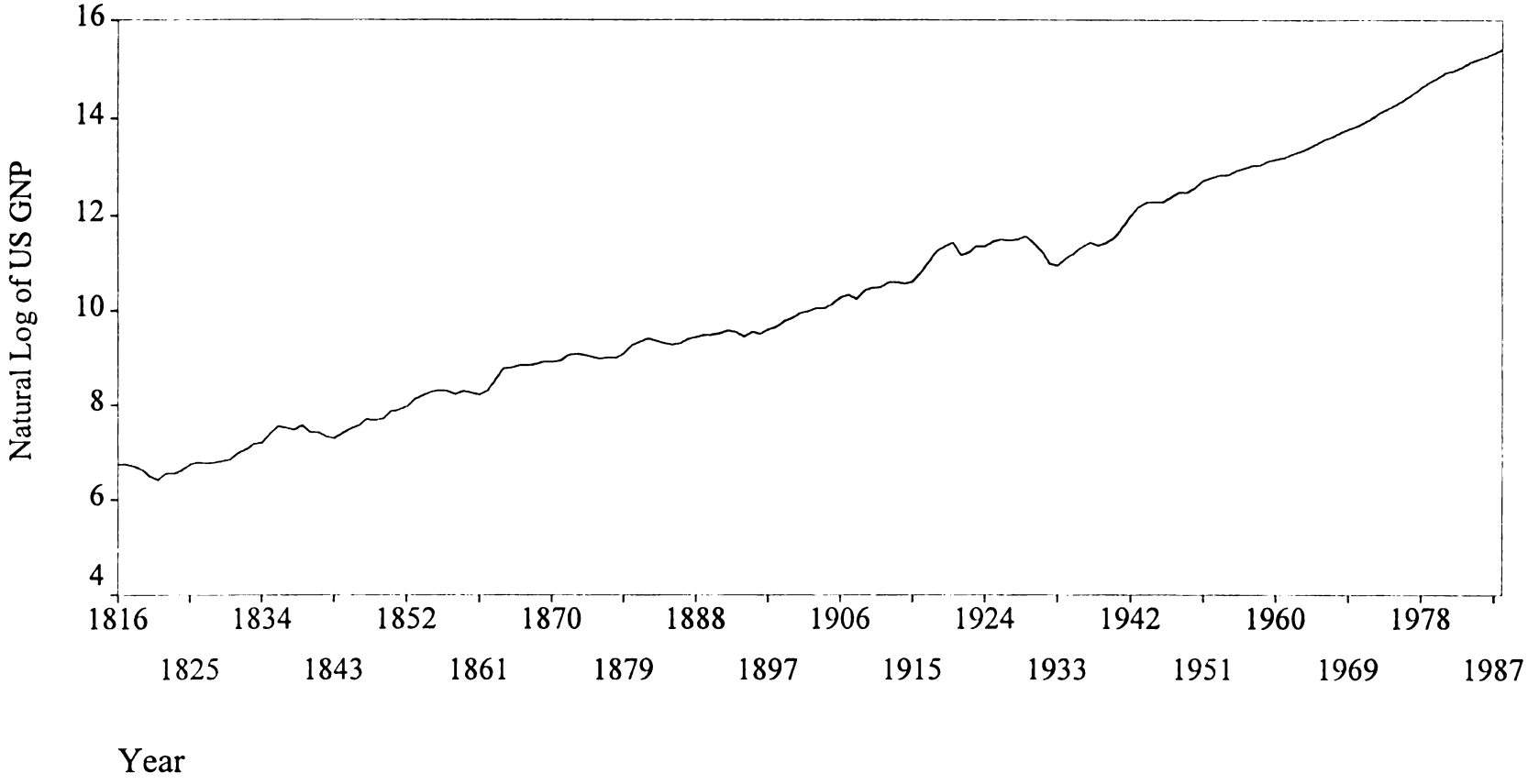

Figure 15

US Gross National Product (logged), 1816-1988

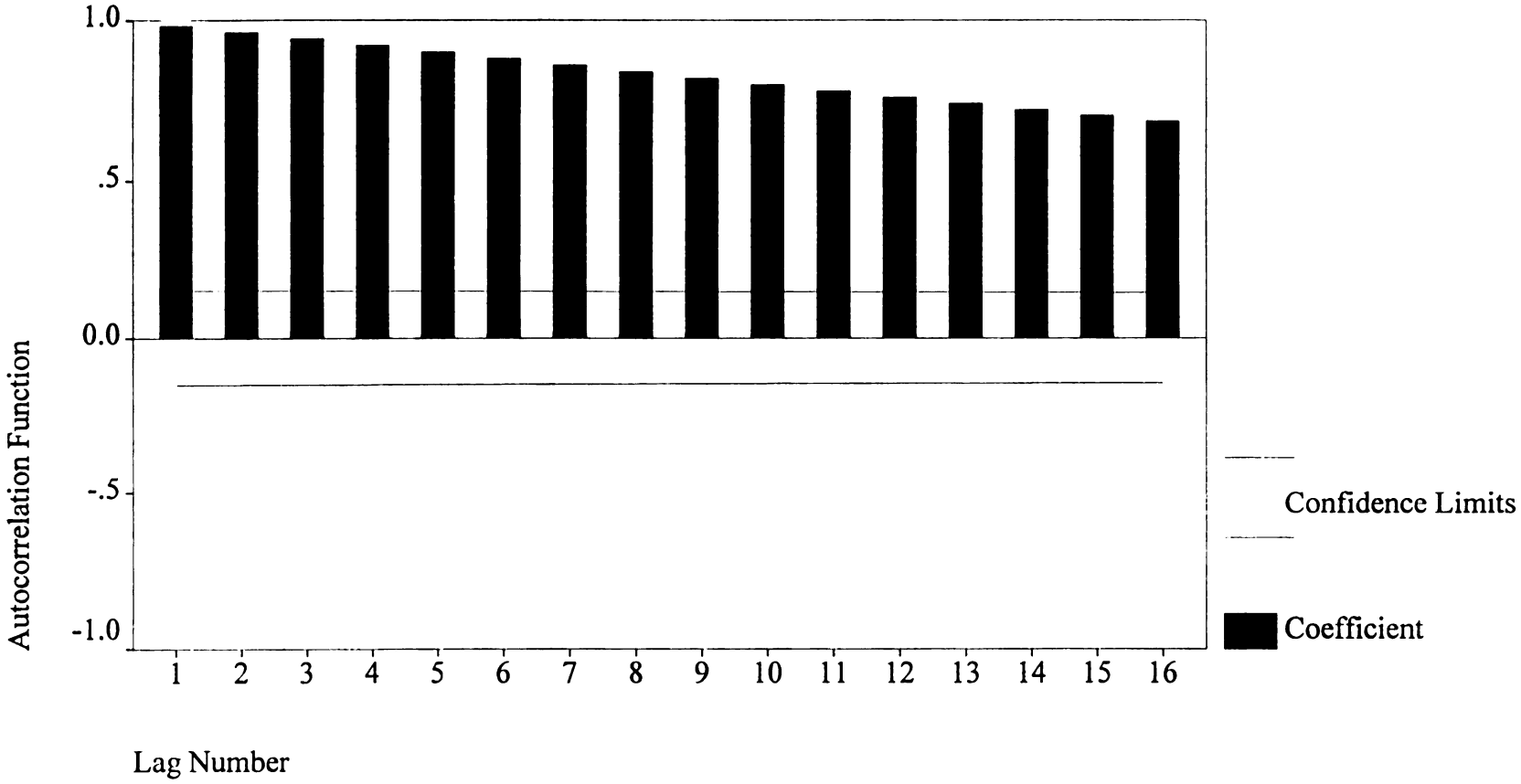

Figure 16

ACF of US Gross National Product (logged)

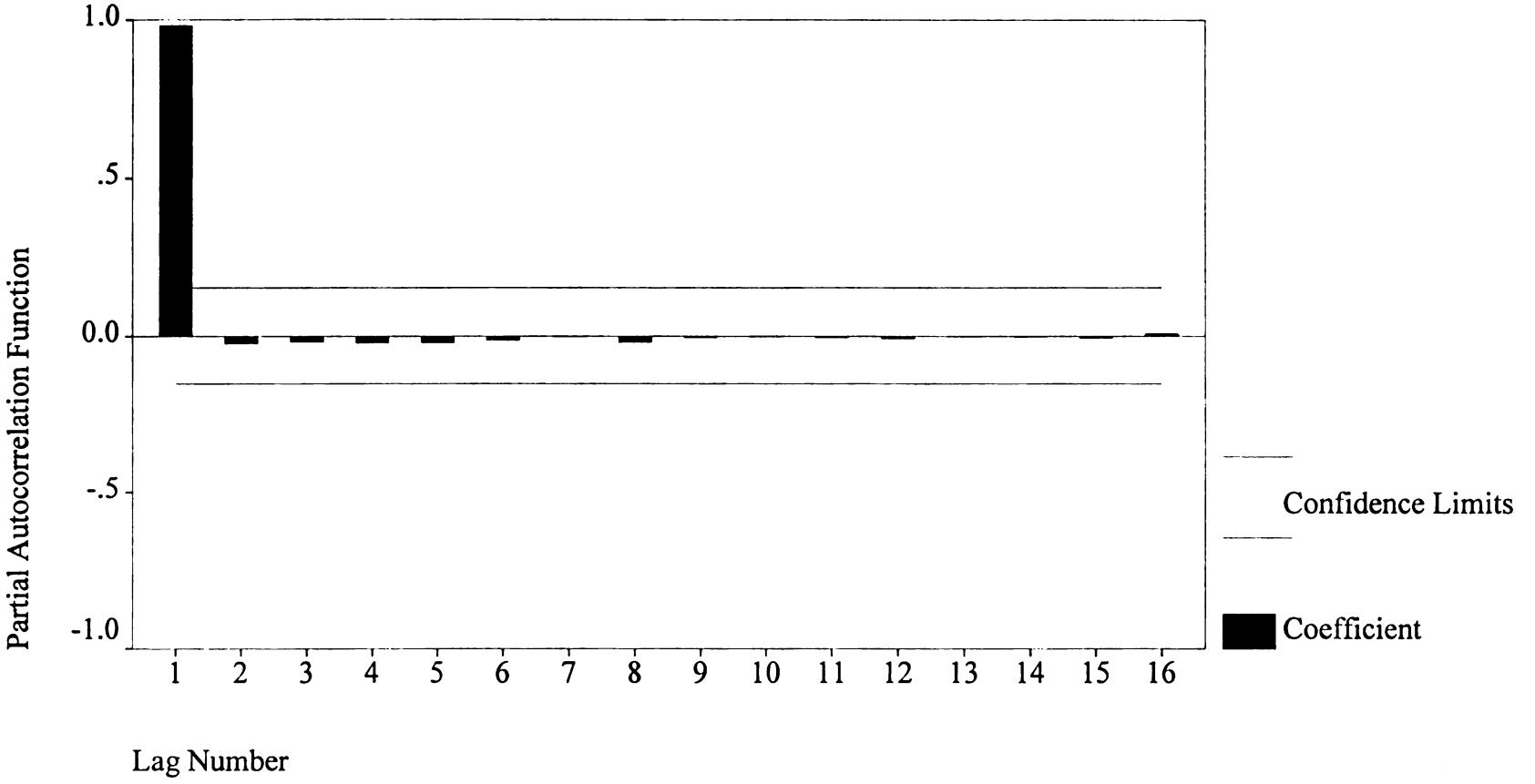

Figure 17

PACF of US Gross National Product (logged)

CHAPTER 4

TESTING THE SYSTEMIC DEMOCRATIC PEACE: A STRUCTURAL EQUATIONS APPROACH

In Chapter 2, I developed a systemic theory of the relationship between democracy and war based on Kant's writings on perpetual peace. Two key features of my theoretical model are 1) that the relationship between democracy and war in the system is *endogenous*, and 2) this relationship is *evolving* over time. I derived several testable propositions that are tested in this chapter with structural equations time series analysis. The methods of analysis utilized in the next two chapters are well suited to capture both the endogenous and dynamic properties of my theoretical model. In this chapter, I analyze several propositions derived in Chapter 2:

- P_1: As the proportion of democracies in the system increases, the proportion of nations fighting war in the international system decreases.
- P_4: An increase in the proportion of nations fighting war in the international system will increase the proportion of democracies.
- P_6: The proportion of nations fighting war in the international system will decrease as the concentration of power in the system increases.
- P_7: The higher the level of trade in the international system, the lower the proportion of nations fighting war.

- P_8: Increases in world production will increase the proportion of democracies in the international system.

The remainder of this chapter is organized as follows. First, I discuss the approach to time series estimation that I adopt in my analysis. Next, I present results from an empirical model utilizing Doyle's measure of systemic democracy. Third, I present results from a second model with the Polity III measure of democracy. Fourth, I discuss the issue of structural stability, which is crucial given the evolutionary relationships predicted by the theoretical model. I present the results of Chow tests for structural stability before turning to a more dynamic approach to estimation in Chapter 5.

Hendry's Approach to Time Series Estimation

The time series analysis in this paper follows David Hendry's approach to econometric modeling.[53] The approach is general to specific in nature, and it is concerned with issues of model specification and validation. Hendry's general to specific modeling strategy is predicated on the argument that if two researchers start with small models, and then reparameterize, they are unlikely to end up with the same model, making it difficult to know which one is the correct specification. Similarly, if diagnostic tests or residual correction procedures are applied (such as GLS), it is hard to know if the new specifications are accurate. Hendry's methodology involves three basic steps (Pagan, 1990:99): 1) specify a general empirical model that is consistent with the relationships between variables specified by the theory, 2) simply the general model "to the smallest version that is compatible with the data (congruent)" using a variety of statistical tests, and 3) evaluate the residuals and

[53] Hendry's methodology is described in a variety of sources, including his (1995) book entitled *Dynamic*

predictive power of the reduced model, making sure that no relevant information has been lost.[54] As Pagan (1990:99) notes, "theory and data continually interplay in this methodology." Hendry argues that this type of "progressive" research strategy increases modeling efficiency. In the structural equations estimation below, I start with a general model based on theory and then test a series of restrictions that leads to a final "reduced" model, consistent with Hendry's approach to time series. The first model estimated in the following section employs the measure of democracy taken from Doyle (1986).

Model One: Doyle's Measure of Democracy

Using the transformed stationary series, I begin estimation with the following general model. I include a legend for the variables and their full names in Table 7.

$$\begin{aligned}\text{Propwar}_t = \; & \delta_0 + \delta_1\text{Propwar}_{t-1} + \delta_2\text{Propwar}_{t-2} + \delta_3\text{Propwar}_{t-3} + \delta_4\text{Propwar}_{t-4} + \\ & \delta_5\Delta\text{Doyledem}_{t-1} + \delta_6\Delta\text{Doyledem}_{t-2} + \delta_7\Delta\text{Doyledem}_{t-3} + \delta_8\Delta\text{Doyledem}_{t-4} + \\ & \delta_9\Delta\text{Lnukexp}_{t-1} + \delta_{10}\Delta\text{Lnukexp}_{t-2} + \delta_{11}\Delta\text{Lnukexp}_{t-3} + \delta_{12}\Delta\text{Lnukexp}_{t-4} + \\ & \delta_{13}\Delta\text{Concen}_{t-1} + \delta_{14}\Delta\text{Concen}_{t-2} + \delta_{15}\Delta\text{Concen}_{t-3} + \delta_{16}\Delta\text{Concen}_{t-4} + \varepsilon_{1t}\end{aligned}$$

$$\begin{aligned}\Delta\text{Doyledem}_t = \; & \beta_0 + \beta_1\text{Propwar}_{t-1} + \beta_2\text{Propwar}_{t-2} + \beta_3\text{Propwar}_{t-3} + \beta_4\text{Propwar}_{t-4} + \\ & \beta_5\Delta\text{Doyledem}_{t-1} + \beta_6\Delta\text{Doyledem}_{t-2} + \beta_7\Delta\text{Doyledem}_{t-3} + \beta_8\Delta\text{Doyledem}_{t-4} + \\ & \beta_9\Delta\text{Lnusgnp}_{t-1} + \beta_{10}\Delta\text{Lnusgnp}_{t-2} + \beta_{11}\Delta\text{Lnusgnp}_{t-3} + \beta_{12}\Delta\text{Lnusgnp}_{t-4} + \varepsilon_{2t}\end{aligned}$$

I include a reasonable number of lags for each variable (four) in order to capture the dynamics in each time series.[55] In addition, all variables are lagged in both equations to

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Econometrics.

[54] Hendry's use of the term "loss of relevant information" is in the classic sense. "Classic methods discard information if they do not meet some prior criteria (standard errors, p-values, Schwarz criterion, residual variance, and the like)." (Granato, 1992:125)

[55] The use of four lags is reasonable because the data is annual, and the typical number of lags employed in the Hendry methodology is five for quarterly data (which contains a much greater number of time points). See Pagan (1990), page 99.

ensure that each right hand side variable is predetermined. The two equations are jointly estimated with a full information maximum likelihood (FIML) estimator.[56] The parameter estimates for the general model are presented in Table 8.

Table 8 presents estimates for both equations listed above, with the proportion of system members fighting interstate wars (Propwar) estimated in Equation 1 and the proportion of democracies in the international system (ΔDoyledem) estimated in Equation 2. The first thing to note in Equation 1 is that the dependent variable (Propwar) has a strong first order autoregressive component, which is evident in the size of the parameter for $Propwar_{t-1}$ (0.67007); the remaining lags of Propwar are statistically insignificant. Doyle's measure of democracy (ΔDoyledem) is significantly and negatively related to the proportion of system members fighting wars (Propwar), although the impact is somewhat lagged; only the fourth lag is negative and significant ($p<.05$). The measure for world trade, British exports (ΔLnukexp), is significant only for the first lag and in the predicted direction (-0.089302). Also, systemic power concentration (ΔConcen) has a negative impact on the proportion of system members fighting war; the third and fourth lags are statistically significant ($p<.05$).

Turning to Equation 2 in Table 8, we can see that all four lags for Propwar are statistically insignificant, although the first three are in the predicted direction (I expected war to have a positive impact on the proportion of democracies in the system). This can be

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[56] Estimation procedures such as 2SLS and 3SLS estimate each equation in a simultaneous equations model separately. "A more general approach is to specify a similar equation for every endogenous variable in the system, calculate the joint density of the vector of all of the endogenous variables conditional on the predetermined variables, and maximize the joint likelihood function. This is known as *full-information maximum likelihood* estimation, or *FIML* (Hamilton, 1994:247)." If a model is just identified, i.e., the number of excluded exogenous variables is no less than the number of included endogenous variables minus one, then 2SLS, 3SLS, Instrumental Variables (IV), and FIML produce identical estimates. The models estimated in the next section are over-identified (the number of excluded exogenous variables is greater than the number of included endogenous variables minus one). In this

explained by the high level of correlation across these lags.[57] The endogenous lags of democracy have mixed signs (lags 1 and 2 are negative, lags 3 and 4 are positive), and none of the parameters is statistically significant. Finally, the fourth lag for world production (as measured by ΔLnusgnp) is significant ($p<.10$) and in the predicted direction (0.033735).

It is clear from Table 8 that several of the independent variables are insignificant in the first general model. I test a series of zero-order restrictions on each (seemingly) insignificant variable with a Wald statistic. The null hypothesis for each restriction is that a given coefficient(s) is zero. Acceptance of the null hypothesis permits the omission of that particular variable in the re-estimation of the model, given that no significant loss of information occurs. Table 9 provides a summary of each reduction stage, including the variable dropped from estimation, the parameter and t-statistic for the omitted variable, and the overall standard errors for each equation (σ_1,σ_2) that are obtained with estimation of the model excluding the variable in question. The general to specific reduction produces the final model (Table 10) describing the relationship between systemic war and the proportion of democracies in the international system.

Table 10 includes information on the range of parameters from the general to the final reduced model. For example, in Equation 1 the parameter on the fourth lag of capability concentration ($\Delta Concen_{t-4}$) varies from -0.229 to -0.180 in the reduction process from the full model to the reduced model, while the parameter for democracy ($\Delta Doyledem_{t-4}$) varies from –0.73616 to -0.53261. Presenting the range of parameters across the reduction process provides a sensitivity test for model specification,

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case, FIML produces more efficient estimates than 2SLS, 3SLS, or IV estimators (Hamilton, 1994:250).

[57] The correlations were as follows: $r(Propwar_{t-1}, Propwar_{t-2})=0.724$, $r(Propwar_{t-1}, Propwar_{t-3})=0.541$,

something similar in spirit to Leamer's extreme bounds analysis (EBA).[58] The final reduced model in Table 10 is extremely robust across the reduction stages, considering that no parameters in the final model switch signs from the full to the reduced model. As Granato (1992:134-135) notes, "reduction does involve a change in the original parameters, but for valid reduction, the parameters must...maintain the same sign as in the original model." In addition, the range of betas is not very large, indicating that the parameters in the final model are representative of the more general theoretical model.

The endogenous relationship between the proportion of democracies in the international system (ΔDoyledem) and the proportion of nations fighting interstate war (Propwar) is clearly significant. The results confirm my expectations about the sign of the endogenous variables. I hypothesized that increases in the proportion of nations fighting war would increase the proportion of democracies in the system (P_4) because war creates conditions that favor the development of republican constitutions and a rule of law among nations (an argument derived from Kant), and because democracies are more likely to win the wars they fight (promoting and establishing democracy in the aftermath of war). The relationship is positive and significant ($p<.05$) for the second lag of Propwar in Equation 2 ($\beta_2=0.035324$), meaning the larger the proportion of states fighting war, the greater the increase in the change in the proportion of democracies in the system. The negative and significant ($p<.05$) parameter on the proportion of democracies ($\Delta Doyledem_{t-4}$, $\delta_8= -0.53261$) in Equation 1 (Table 10) supports the democratic peace proposition (P_1). In other words, the

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$r(Propwar_{t-2}, Propwar_{t-3})=0.726$, $r(Propwar_{t-3}, Propwar_{t-4})=0.725$.

[58] Leamer's extreme bounds analysis (EBA) involves 1) formulating a general family of models, 2) identifying prior distributions for the parameters of interest, 3) analyzing the sensitivity of inferences on the parameters of interest to the choice of the prior distributions, and 4) obtaining a narrower range for

greater the increase in the proportion of democracies in the system, the lower the proportion of states fighting interstate wars. Peaceful relations between democracies create greater peace and further the spread of democracy and democratic norms in the international system. Thus the empirical relationship between democracy and war at the systemic level is clearly endogenous as I argued earlier.

Another interesting result in the model is the fairly large impact of systemic capability concentration ($\Delta Concen_{t-3}$, $\Delta Concen_{t-4}$) on the proportion of system members fighting war (Equation 1). The third and fourth lags of concentration have a strong negative impact on war, which implies that positive changes in systemic capability concentration make war less likely in the system, confirming P_6. This empirical finding provides support to the power preponderance hypothesis, or the notion that war is less likely when concentration of power in the system changes towards greater concentration. Positive changes in concentration (moving closer to total preponderance or $\Delta Concen=1$) make war less likely because the level of uncertainty that leaders have about the relative power rankings of nations in the system decreases making it easier to predict the behavior of opponents. This also indicates that the key explanatory variable for war in the neorealist framework, the distribution of power, is important even after controlling for the pacifying impact of democracy at the systemic level.

The two economic variables, British exports ($\Delta Lnukexp$) and US Gross National Product ($\Delta Lnusgnp$), are also statistically significant and in the predicted direction. I expected the higher the level of world trade (British exports), the less likely war in the international system (P_7) because trade increases dependence across states, making war a more costly means for states to gain access to valuable resources. This is confirmed by the

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inferences (Pagan, 1990:104-105). See also Leamer (1983) and Leamer and Leonard (1983).

negative sign on $\Delta Lnukexp_{t-1}$ in Equation 1 (Table 10), although the parameter is marginally significant ($p < .10$). In addition, world production is positively related to the growth in global democracy (P_8), supporting Huntington's (1991) argument that global economic growth promotes the adoption of democratic forms of government in the world. This relationship is confirmed by the positive and significant ($p < .10$) sign on $\Delta Lnusgnp_{t-4}$ in Equation 2 (Table 10). In summary, the structural equations model tested with Doyle's measure of democracy confirms each of the theoretical propositions derived in Chapter 2. I turn now to an alternative measure of democracy, the Polity III measure, to determine if the findings in the first model are robust.

Model Two: Polity III Measure of Democracy

Model two is similar to model one in that I utilize the transformed stationary series in both, although I use the Polity III Measure of Democracy (discussed in Chapter 3) instead of Doyle's democracy indicator. I begin estimation with the following general model:

$$\begin{aligned} Propwar_t = \; & \delta_0 + \delta_1 Propwar_{t-1} + \delta_2 Propwar_{t-2} + \delta_3 Propwar_{t-3} + \delta_4 Propwar_{t-4} + \\ & \delta_5 \Delta Politydem_{t-1} + \delta_6 \Delta Politydem_{t-2} + \delta_7 \Delta Politydem_{t-3} + \delta_8 \Delta Politydem_{t-4} + \\ & \delta_9 \Delta Lnukexp_{t-1} + \delta_{10} \Delta Lnukexp_{t-2} + \delta_{11} \Delta Lnukexp_{t-3} + \delta_{12} \Delta Lnukexp_{t-4} + \\ & \delta_{13} \Delta Concen_{t-1} + \delta_{14} \Delta Concen_{t-2} + \delta_{15} \Delta Concen_{t-3} + \delta_{16} \Delta Concen_{t-4} + \varepsilon_{1t} \end{aligned}$$

$$\begin{aligned} \Delta Politydem_t = \; & \beta_0 + \beta_1 Propwar_{t-1} + \beta_2 Propwar_{t-2} + \beta_3 Propwar_{t-3} + \beta_4 Propwar_{t-4} + \\ & \beta_5 \Delta Politydem_{t-1} + \beta_6 \Delta Politydem_{t-2} + \beta_7 \Delta Politydem_{t-3} + \beta_8 \Delta Politydem_{t-4} + \\ & \beta_9 \Delta Lnusgnp_{t-1} + \beta_{10} \Delta Lnusgnp_{t-2} + \beta_{11} \Delta Lnusgnp_{t-3} + \beta_{12} \Delta Lnusgnp_{t-4} + \varepsilon_{2t} \end{aligned}$$

Again, I include four of lags of each variable to capture the dynamics in each individual time series. The FIML parameter estimates for the general model are presented in Table 11.

The parameter estimates for the first equation in Table 11 (Propwar) are similar to the results in Table 8. The proportion of nations fighting interstate wars (Propwar) again exhibits

a strong first order autoregressive process, which is evident by the positive coefficient on $Propwar_{t-1}$ in Equation 1 (δ_1=0.68880, which is close to the value of 0.67 presented in Table 8). As predicted, the Polity measure of democracy has a negative impact on the proportion of states fighting war (Propwar); the first, third, and fourth lags ($\Delta Politydem_{t-1}$, $\Delta Politydem_{t-3}$, $\Delta Politydem_{t-4}$) have negative parameters, although the parameter for the first lag is the only one that is statistically significant ($p<.05$). The measure for world trade, ΔLnukexp, exhibits three positive lags (contrary to theoretical expectations), although the coefficient for the first lag is statistically significant ($p<.10$) and in the predicted direction (-0.075). The results for the systemic concentration measure in Equation 1, Table 11 are extremely similar to the estimates obtained in Model 1. The first, third, and fourth lags ($\Delta Concen_{t-1}$, $\Delta Concen_{t-3}$, $\Delta Concen_{t-4}$) are negative as expected, and the last two are significant ($p<.05$).

The results in Equation 2, Table 11 for the proportion of democracies in the system (ΔPolitydem) are slightly different from the results obtained in Model One (Table 8). The impact of war on the proportion of democracies is in the predicted direction for the first lag ($\beta_1 = 0.075$) and this parameter is statistically significant ($p<.01$). As was the case in Model 1, none of the autoregressive lags for democracy (ΔPolitydem) are statistically significant and they produced mixed signs (lags 1 and 4 are positive, lags 2 and 3 are negative). Finally, the indicators of world production (ΔLnusgnp) have no significant impact on the proportion of democracies in the international system, although 3 of the 4 lags are in the predicted direction (positive).

Many of the independent variables in Model two are insignificant. Again, I test a series of zero-order restrictions on each (seemingly) insignificant variable with a Wald

statistic. The null hypothesis for each restriction is that a given coefficient(s) is zero. Acceptance of the null hypothesis permits the omission of that particular variable in the re-estimation of the model, given that no significant loss of information occurs. Table 12 provides a summary of each reduction stage, including the variable dropped from estimation, the parameter and t-statistic for the omitted variable, and the overall standard errors for each equation (σ_1,σ_2) that are obtained with estimation of the model excluding the variable in question. The general to specific reduction produces the final model (Table 13). To reiterate, Table 13 includes information on the range of parameters from the general to the final reduced model. The final parameters in Model two are robust, given that no parameters in the final model change signs across the reduction stages.

Model two also provides evidence of an endogenous relationship between the proportion of democracies in the international system (ΔPolitydem) and the proportion of system members fighting interstate wars (Propwar). The positive and significant ($p < .001$) sign on Propwar_{t-1} in Equation 2 provides support for P_4, i.e., as the level of war in the international system increases, the change in the proportion of democracies in the system also increases. Democracy ($\Delta\text{Politydem}_{t-1}$, $\Delta\text{Politydem}_{t-4}$) in turn has a negative and significant impact on the amount of war in the system, which I predicted theoretically (P_1). The greater the increase in the proportion of democracies in the system, the lower the proportion of states fighting interstate wars.

I discovered a significant and negative lagged relationship between systemic capability concentration and systemic war in Model one, which is confirmed in Model two as well ($\Delta\text{Concen}_{t-3}$, $\Delta\text{Concen}_{t-4}$). The third and fourth lags of concentration have a strong

negative impact on war, which imply that positive changes in capability concentration make war less likely in the system, supporting P_6 (the power preponderance hypothesis). Systemic trade also has a negative impact ($\Delta Lnukexp_{t-1}$) on the proportion of system members fighting war, which confirms my theoretical expectation (P_7). While world production had a positive impact on global democracy in model one, it drops out of model two in the reduction process.[59]

The two models estimated above confirm my theoretical expectations about the relationship between war, democracy, power concentration, trade, and world production at the systemic level. I expect, however, that the relationship between democracy and war is evolving over time (P_3, P_5). In particular, I anticipate that the negative impact of democracy on war in the international system will become stronger over time as the proportion of democracies increases (P_3). Also, the positive impact of war on democracy should decrease over time as the proportion of democracies in the international system increases (P_5). If the relationship between democracy and war at the systemic level is an evolving relationship, the models estimated above should show evidence of non-structural stability, an issue I address below.

The Issue of Structural Stability

The two equation models tested in the previous section support my argument about the endogenous relationship between democracy and conflict in the international system. One important issue in model specification is structural stability, i.e., whether the parameters

[59] Although, the parameter for world production in Model one (Table 10) was significant only at p=0.0586.

in a model are constant across one or more subsamples (such as different time periods). I have theoretical reasons to believe that the models estimated above may contain time-varying parameters. For example, I expect the pacifying impact of democracy on war to increase across the sample period. As the proportion of democracies in the world increases, the domestic "rule of law" characteristic of democracies will diffuse throughout the international system, moving us closer to a federation of free states. Also the rules and norms of behavior between democracies should become more prevalent over time as the number of democracies increases, and as democratic hegemonic states create and promote liberal institutions and regimes. As the system moves closer to the federation of free states, the pacifying impact of democracy on war will become stronger over time as democracies become greater in number and as their norms of behavior spread throughout the international system as a whole.

I also argued in Chapter 2 that the relationship between the proportion of nations fighting war and the proportion of democracies in the system is evolutionary as well. Higher levels of warfare in the system promote the development of democratic states due to the success of democracies in wars and the improvement in domestic and international institutions that war brings about over time. However, the substantive impact of war on the creation of democracy should decline over time, as war becomes less frequent in the international system (due to the expansion of the international "rule of law").

If the impact of the democratic peace is getting stronger over time relative to other factors that affect the level of war in the international system (and vice versa), then estimation techniques must permit dynamics in the parameter estimates. The FIML estimation discussed in the previous section assumes that the parameters are constant. Because I have theoretical reasons to believe the parameters in Models One and Two are changing over time,

I conducted one-step ahead Chow tests for both models to determine if the parameters are characterized by structural change. The results of the Chow tests are presented in Figures 18 and 19. The one step ahead Chow test is conducted under the null hypothesis of constant parameters and the test statistic is distributed as F(1, t-k-1) for t = M,....T ($1 < M < t < T$). Any values of the test statistic that exceed the critical F value (points that lie about the 5% cutoff line in the graphs) indicate the presence of structural change in the model.

It can be seen in Figures 18 and 19 that the parameter estimates are not stable across the estimation period, as I hypothesized. There are several "break" points in the Chow tests for both models, indicating the likely presence of time varying parameters. Model One is characterized by five significant structural changes, or break points (Figure 18): 1919, 1941, 1946, 1950, and 1960. The first break point, which is also the largest, coincides with the end of the First World War. The next two significant spikes occur towards the beginning (1941) and at the end of World War II (1946). Given that war has a significant impact on the proportion of democracies in the international system, it seems plausible that the greatest wars in history have the largest impact on the international system, producing structural changes in the relationships between democracy and war. Model one also contains two structural breaks in the post-World War II period, 1950 and 1960. This first spike can be accounted for by the large increase in the number of democratic states established after WWII. The second spike can be explained by the large increase in the number of system members in 1960. Many African states gained independence in 1960, increasing the number of system members from 89 in 1959 to 107 in 1960. Doyle (1986) indicates no changes in the number of democracies between 1959 and 1960, whereas the Polity III data adds four democracies to the system in 1960 (from 37 to 41). This could explain the lack of structural

change (or significant spikes) after 1946 in the second model (using the Polity III measure). The structural breaks in Model Two (Figure 19) are similar to the break points for Model One: 1914, 1917, 1919, 1940, and 1946. In this case, all five significant spikes are associated with World War I or World War II.

Conclusion

In this chapter, I presented the results of two structural equation models designed to test several of the theoretical propositions delineated in Chapter 2. My results can be summarized as follows:

1) The relationship between democracy and war in the international system is endogenous. As the proportion of democracies increases, the level of systemic war decreases, and this holds for both measures of democracy (ΔDoyledem, ΔPolitydem). Also, the greater the proportion of nations fighting war in the system, the greater the growth in global democracy. These results support the theoretical propositions I derived from Kant's systemic argument of the relationship between democracy and war.

2) Systemic capability concentration has a negative impact on the proportion of system members fighting wars. This provides support to the power preponderance theoretical approach that predicts increasing power concentration to lead to greater systemic peace.

3) Systemic trade decreases the overall level of war in the international system, consistent with Mansfield's argument that trade increases dependence across states, and that war is a more costly means for states to gain access to valuable resources.

4) World production increases the level of democracy in the international system, although this result is significant in only one model (Model one) and the marginal impact is fairly small.

The most significant contribution of this chapter is that I provide the first empirical test of the endogenous relationship between democracy and war at the systemic level. I have demonstrated that scholars need to consider how war affects the development of democracy in addition to emphasizing peaceful relations between democracies. Although the FIML empirical results support several of my theoretical propositions, these models assume that the relationships between variables are constant across time. I presented the results of Chow tests for both models, and these tests confirmed my theoretical expectations that the relationship between democracy and war at the systemic level is changing over time (or evolutionary). The models contain several break points, most of which are associated with the largest wars in history (WWI and WWII).

As a first step in determining how the parameter estimates vary over time, I split the entire time period into 30, 40, and 50-year intervals starting at 1821. I estimated the final reduced model for Model two in each sub-sample, increasing the year by one across the series. This produces a series of "sliding windows" that permit me to see how the parameters change over time. I analyze these sliding windows in Chapter 5.

Table 7 – Variable Legend

Variable Name	Variable Description
Propwar	Proportion of System Members Fighting Interstate Wars
Doyledem	Proportion of Democracies in the International System Measured with Doyle's (1986) measure of democracy
Politydem	Proportion of Democracies in the International System Measured with the Polity III measure of democracy (democracy > 5)
Lnukexp	Natural log of British Exports
Concen	Major Power Capability Concentration
Lnusgnp	Natural log of US Gross National Product

Table 8 - FIML Estimates of Model One, 1816-1982

Equation 1 for Proportion of War (Propwar)

Variable	Coefficient	S.E	t-value	t-probability
$Propwar_{t-1}$	0.67007	0.080169	8.358	0.0000
$Propwar_{t-2}$	0.11944	0.097176	1.229	0.2210
$Propwar_{t-3}$	-0.019987	0.095617	-0.209	0.8347
$Propwar_{t-4}$	0.021355	0.081673	0.261	0.7941
$\Delta Doyledem_{t-1}$	0.024961	0.27532	0.091	0.9279
$\Delta Doyledem_{t-2}$	0.40060	0.27665	1.448	0.1497
$\Delta Doyledem_{t-3}$	-0.31933	0.27573	-1.158	0.2487
$\Delta Doyledem_{t-4}$	-0.73616	0.27588	-2.668	0.0085
$\Delta Lnukexp_{t-1}$	-0.089302	0.041433	-2.155	0.0328
$\Delta Lnukexp_{t-2}$	-0.0058248	0.041487	-0.140	0.8885
$\Delta Lnukexp_{t-3}$	0.051321	0.040019	1.282	0.2017
$\Delta Lnukexp_{t-4}$	0.029437	0.038181	0.771	0.4419
$\Delta Concen_{t-1}$	-0.0094043	0.090797	-0.104	0.9176
$\Delta Concen_{t-2}$	-0.016361	0.10038	-0.163	0.8707
$\Delta Concen_{t-3}$	-0.19435	0.098605	-1.971	0.0506
$\Delta Concen_{t-4}$	-0.21738	0.084957	-2.559	0.0115
Constant	0.016030	0.0070731	2.266	0.0249

$\sigma_1 = 0.0612357$

Equation 2 for Proportion of Democracies (ΔDoyledem)

Variable	Coefficient	S.E.	t-value	t-probability
$Propwar_{t-1}$	0.011199	0.024994	0.448	0.6548
$Propwar_{t-2}$	0.012521	0.030195	0.415	0.6790
$Propwar_{t-3}$	0.018149	0.030090	0.603	0.5473
$Propwar_{t-4}$	-0.0081068	0.025136	-0.323	0.7475
$\Delta Doyledem_{t-1}$	-0.045964	0.081878	-0.561	0.5754
$\Delta Doyledem_{t-2}$	-0.016292	0.081684	-0.199	0.8422
$\Delta Doyledem_{t-3}$	0.087951	0.082096	1.071	0.2858
$\Delta Doyledem_{t-4}$	0.090592	0.081221	1.115	0.2665
$\Delta Lnusgnp_{t-1}$	-0.0034249	0.019833	-0.173	0.8631
$\Delta Lnusgnp_{t-2}$	0.021572	0.020857	1.034	0.3027
$\Delta Lnusgnp_{t-3}$	-0.00052256	0.020658	-0.025	0.9799
$\Delta Lnusgnp_{t-4}$	0.033735	0.019754	1.708	0.0898
Constant	-0.0037713	0.0022331	-1.689	0.0934

$\sigma_2 = 0.0191646$

Log-likelihood = 1109.3809 T = 162

Table 9 - Summary of Model One Reduction

Variable	**Equation of β removed**	**β removed**	**t-statistic removed**	**σ_1 (Eq. 1)**	**σ_2 (Eq. 2)**
None	---	---	---	0.0612357	0.0191646
$\Delta Lnusgnp_{t-3}$	$\Delta Doyledem_t$	-0.00052256	-0.025	0.0610285	0.0190998
$\Delta Doyledem_{t-1}$	$Propwar_t$	0.024996	0.091	0.0610301	0.0190998
$\Delta Concen_{t-1}$	$Propwar_t$	-0.0080558	-0.090	0.0608308	0.0190356
$\Delta Concen_{t-2}$	$Propwar_t$	-0.011302	-0.127	0.0608295	0.0190356
$\Delta Lnukexp_{t-2}$	$Propwar_t$	-0.0054157	-0.133	0.0606314	0.0189721
$\Delta Doyledem_{t-2}$	$\Delta Doyledem_t$	-0.016279	-0.201	0.0606314	0.0189748
$\Delta Lnusgnp_{t-1}$	$\Delta Doyledem_t$	-0.0035649	-0.182	0.0604305	0.0189164
$Propwar_{t-3}$	$Propwar_t$	-0.020282	-0.216	0.0604398	0.0189164
$Propwar_{t-4}$	$Propwar_t$	0.013349	0.199	0.0602475	0.0188540
$Propwar_{t-4}$	$\Delta Doyledem_t$	-0.0080867	-0.330	0.0602477	0.0188620
$Propwar_{t-3}$	$\Delta Doyledem_t$	0.011117	0.461	0.0600504	0.0188129
$Propwar_{t-1}$	$\Delta Doyledem_t$	0.011396	0.473	0.0600506	0.0188269
$\Delta Doyledem_{t-1}$	$\Delta Doyledem_t$	-0.044774	-0.566	0.0598557	0.0187861
$\Delta Lnukexp_{t-4}$	$Propwar_t$	0.030218	0.829	0.0599858	0.0187858
$\Delta Doyledem_{t-4}$	$\Delta Doyledem_t$	0.079415	1.014	0.0597953	0.0187873
$\Delta Lnukexp_{t-2}$	$Propwar_t$	0.018508	1.026	0.0597933	0.0188454
$\Delta Doyledem_{t-3}$	$\Delta Doyledem_t$	0.095463	1.231	0.0596031	0.0188764
$\Delta Doyledem_{t-3}$	$Propwar_t$	0.28533	-1.098	0.0596530	0.0188764
$\Delta Lnukexp_{t-3}$	$Propwar_t$	0.048655	1.366	0.0600007	0.0188160
$Propwar_{t-2}$	$Propwar_t$	0.10289	1.318	0.0596490	0.0188164
$\Delta Doyledem_{t-2}$	$Propwar_t$	0.417430	1.464	0.0595930	0.0188164

Table 10 - FIML Estimates of the Final Reduced Model One, 1816-1982

Equation 1 for Proportion of War (Propwar)

Variable	Coefficient	S.E.	t-value	t-probability	Range of Betas
$Propwar_{t-1}$	0.742030	0.053623	13.838	0.0000	0.66774 - 0.74285
$\Delta Doyledem_{t-4}$	-0.532610	0.256660	-2.075	0.0396	-0.73616 - (-0.53261)
$\Delta Lnukexp_{t-1}$	-0.061845	0.034615	-1.787	0.0759	-0.09190 - (-0.06185)
$\Delta Concen_{t-3}$	-0.159180	0.078988	-2.015	0.0456	-0.21054 - (-0.15918)
$\Delta Concen_{t-4}$	-0.182540	0.069400	-2.630	0.0094	-0.22970 - (-0.18093)
Constant	0.021092	0.006111	3.452	0.0007	---

$\sigma_1 = 0.0606847$

Equation 2 for Proportion of Democracies (ΔDoyledem)

Variable	Coefficient	S.E.	t-value	t-probability	Range of Betas
$Propwar_{t-2}$	0.035324	0.016925	2.087	0.0385	0.01252 - 0.03532
$\Delta Lnusgnp_{t-4}$	0.033990	0.017842	1.905	0.0586	0.03279 - 0.03405
Constant	-0.002898	0.001926	-1.505	0.1344	---

$\sigma_2 = 0.0187568$

Log-likelihood = 1102.7241 T = 162

Table 11 - FIML Estimates of Model Two, 1816-1988

Equation 1 for Proportion of War (Propwar)

Variable	Coefficient	S.E.	t-value	t-probability
$Propwar_{t-1}$	0.68880	0.079516	8.662	0.0000
$Propwar_{t-2}$	0.14711	0.10025	1.467	0.1443
$Propwar_{t-3}$	-0.051126	0.097290	-0.526	0.6000
$Propwar_{t-4}$	0.028918	0.081880	0.353	0.7244
$\Delta Politydem_{t-1}$	-0.60418	0.23409	-2.581	0.0108
$\Delta Politydem_{t-2}$	0.30144	0.23577	1.279	0.2030
$\Delta Politydem_{t-3}$	-0.074835	0.24405	-0.307	0.7595
$\Delta Politydem_{t-4}$	-0.39245	0.23783	-1.650	0.1010
$\Delta Lnukexp_{t-1}$	-0.075009	0.040112	-1.870	0.0634
$\Delta Lnukexp_{t-2}$	0.040844	0.041282	0.989	0.3240
$\Delta Lnukexp_{t-3}$	0.021568	0.038696	0.557	0.5781
$\Delta Lnukexp_{t-4}$	0.010873	0.036061	0.302	0.7634
$\Delta Concen_{t-1}$	-0.053751	0.087556	-0.614	0.5402
$\Delta Concen_{t-2}$	0.013600	0.096572	0.141	0.8882
$\Delta Concen_{t-3}$	-0.18565	0.096141	-1.931	0.0553
$\Delta Concen_{t-4}$	-0.20427	0.084707	-2.411	0.0171
Constant	0.014113	0.0068431	2.062	0.0409

$\sigma_1 = 0.0602191$

Equation 2 for Proportion of Democracies (ΔPolitydem)

Variable	Coefficient	S.E.	t-value	t-probability
$Propwar_{t-1}$	0.075435	0.027704	2.723	0.0072
$Propwar_{t-2}$	-0.028874	0.034184	-0.845	0.3996
$Propwar_{t-3}$	-0.011640	0.034038	-0.342	0.7328
$Propwar_{t-4}$	0.032556	0.028275	1.151	0.2514
$\Delta Politydem_{t-1}$	0.024008	0.080646	0.298	0.7663
$\Delta Politydem_{t-2}$	-0.040843	0.081785	-0.499	0.6182
$\Delta Politydem_{t-3}$	-0.11958	0.082538	-1.449	0.1494
$\Delta Politydem_{t-4}$	0.053362	0.080941	0.659	0.5107
$\Delta Lnusgnp_{t-1}$	0.021966	0.022106	0.994	0.3220
$\Delta Lnusgnp_{t-2}$	0.00080819	0.023134	0.035	0.9722
$\Delta Lnusgnp_{t-3}$	0.0010501	0.022760	0.046	0.9633
$\Delta Lnusgnp_{t-4}$	-0.0010263	0.021607	-0.048	0.9622
Constant	-0.0039329	0.0024528	-1.603	0.1109

$\sigma_2 = 0.0211797$

Log-likelihood = 1135.4457 T = 168

Table 12 - Summary of Model Two Reduction

Variable	**Equation of β removed**	**β removed**	**t-statistic remove**	**σ_1 (Eq. 1)**	**σ_2 (Eq. 2)**
None	---	---	---	0.0602191	0.0211797
$\Delta Lnusgnp_{t-2}$	$\Delta Politydem_t$	0.00080819	0.035	0.0600232	0.0211109
$\Delta Lnusgnp_{t-4}$	$\Delta Politydem_t$	-0.0010597	-0.049	0.0600232	0.0211109
$\Delta Lnusgnp_{t-3}$	$\Delta Politydem_t$	0.00098099	0.048	0.0598293	0.0210428
$\Delta Concen_{t-2}$	$Propwar_t$	0.013687	0.143	0.0598351	0.0210429
$\Delta Lnukexp_{t-4}$	$Propwar_t$	0.010348	0.290	0.0596552	0.0209753
$\Delta Politydem_{t-1}$	$\Delta Politydem_t$	0.024469	0.308	0.0596553	0.0209816
$\Delta Politydem_{t-3}$	$Propwar_t$	-0.06869	-0.286	0.0594786	0.0209147
$Propwar_{t-4}$	$Propwar_t$	0.02328	0.299	0.0594959	0.0209147
$Propwar_{t-3}$	$\Delta Politydem_t$	-0.01243	-0.373	0.0593073	0.0208572
$Propwar_{t-3}$	$Propwar_t$	-0.036618	-0.462	0.0593448	0.0208572
$\Delta Politydem_{t-2}$	$\Delta Politydem_t$	-0.046922	-0.601	0.0591580	0.0208156
$\Delta Lnukexp_{t-3}$	$Propwar_t$	0.025737	0.705	0.0592604	0.0208157
$\Delta Concen_{t-1}$	$Propwar_t$	-0.057002	-0.754	0.0591898	0.0207506
$\Delta Politydem_{t-4}$	$\Delta Politydem_t$	0.060083	0.782	0.0591900	0.0207893
$\Delta Lnusgnp_{t-1}$	$\Delta Politydem_t$	0.020808	1.039	0.0590054	0.0207866
$Propwar_{t-2}$	$\Delta Politydem_t$	-0.033778	-1.161	0.0590055	0.0208730
$Propwar_{t-4}$	$\Delta Politydem_t$	0.017448	0.857	0.0588230	0.0208551
$\Delta Politydem_{t-3}$	$\Delta Politydem_t$	-0.084933	-1.123	0.0588227	0.0209347
$\Delta Politydem_{t-2}$	$Propwar_t$	0.26720	1.220	0.0589186	0.0208704

Table 13 - FIML Estimates of the Final Reduced Model Two, 1816-1988

Equation 1 for Proportion of War (Propwar)

Variable	Coefficient	S.E.	t-value	t-probability	Range of Betas
$Propwar_{t-1}$	0.667980	0.074994	8.907	0.0000	0.66798 - 0.68971
$Propwar_{t-2}$	0.143130	0.078647	1.820	0.0706	0.12365 - 0.15709
$\Delta Politydem_{t-1}$	-0.580770	0.227020	-2.558	0.0114	-0.60902 - (-0.58075)
$\Delta Politydem_{t-4}$	-0.367000	0.225920	-1.624	0.1062	-0.39282 - (-0.34078)
$\Delta Lnukexp_{t-1}$	-0.072341	0.035449	-2.041	0.0429	-0.07576 - (-0.07212)
$\Delta Lnukexp_{t-2}$	0.047588	0.038532	1.235	0.2186	0.03825 - 0.04893
$\Delta Concen_{t-3}$	-0.185000	0.083076	-2.227	0.0273	-0.20068 - (-0.18500)
$\Delta Concen_{t-4}$	-0.197880	0.068406	-2.893	0.0043	-0.21765 - (-0.19131)
Constant	0.015505	0.006196	2.502	0.0133	---

$\sigma_1 = 0.0589186$

Equation 2 for Proportion of Democracies (ΔPolitydem)

Variable	Coefficient	S.E.	t-value	t-probability	Range of Betas
$Propwar_{t-1}$	0.065283	0.018142	3.598	0.0004	0.06051 - 0.08075
Constant	-0.002743	0.002004	-1.368	0.1731	---

$\sigma_2 = 0.0208704$

Log-likelihood = 1130.9255 T = 168

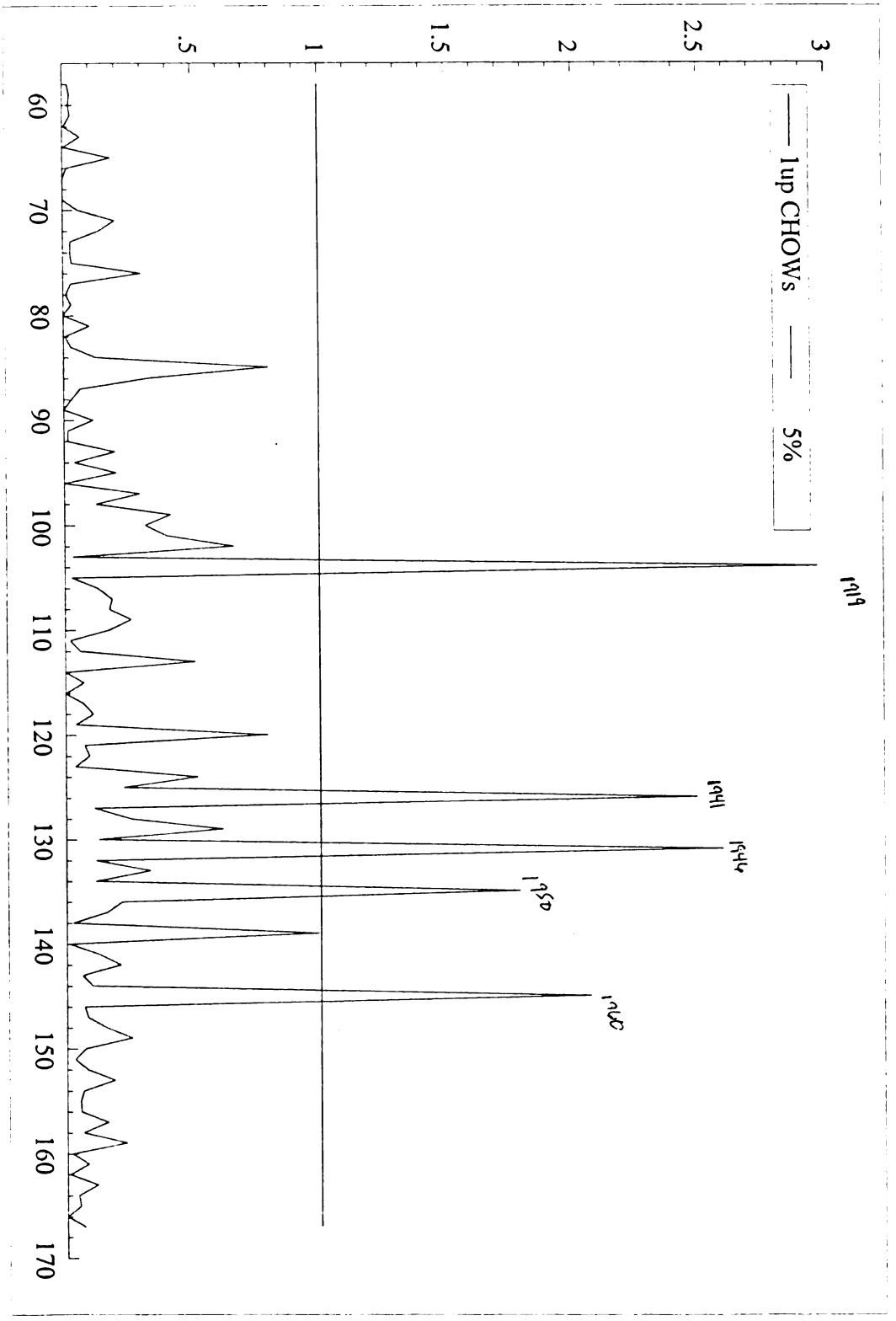

Figure 18 - One Step Ahead Chow Tests for Model One

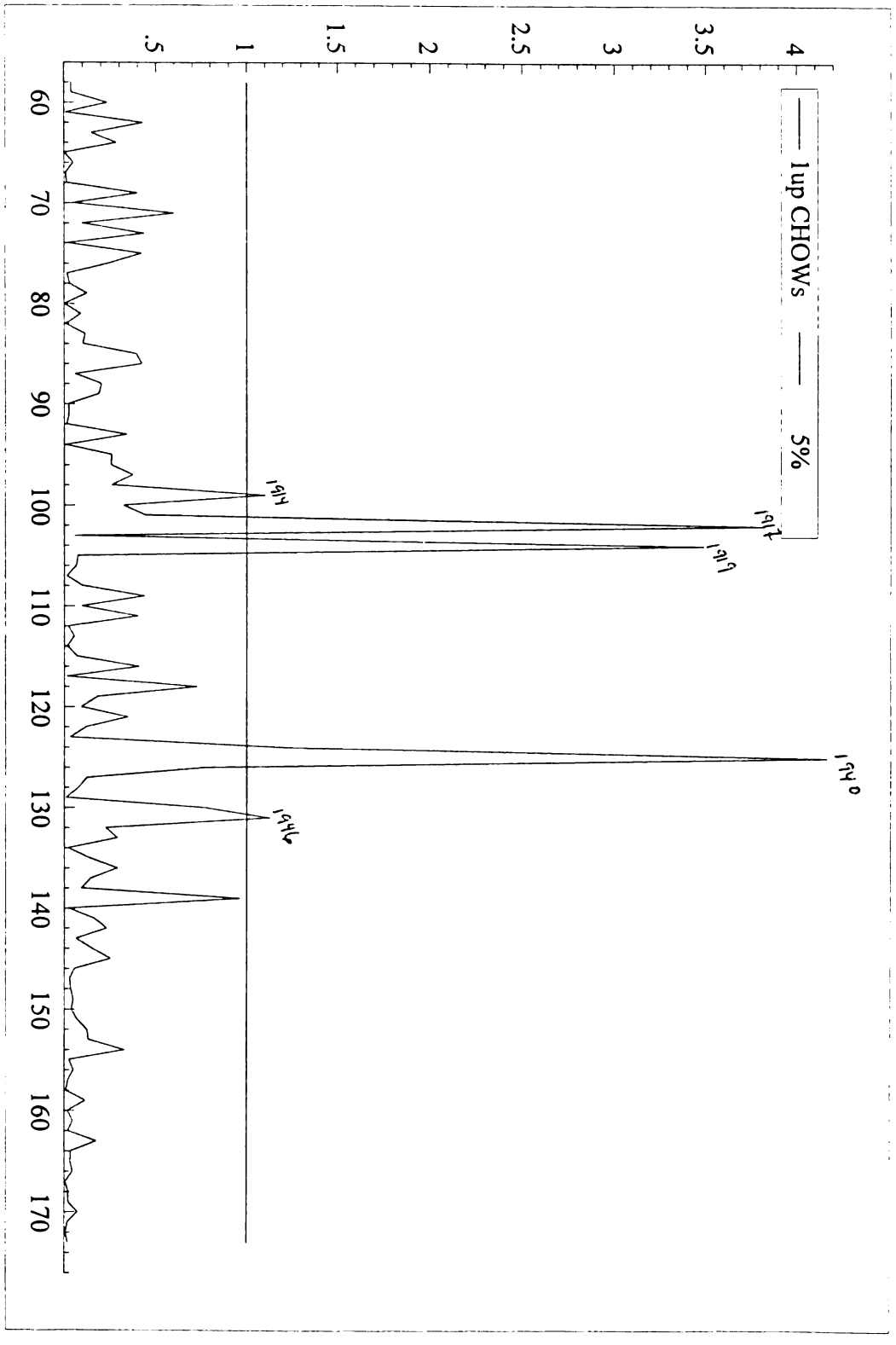

Figure 19 - One Step Ahead Chow Tests for Model Two

CHAPTER 5

TESTING EVOLUTIONARY RELATIONSHIPS: SLIDING WINDOW ANALYSIS

In Chapter 4, I analyzed two structural equations models to test several propositions derived in Chapter 2. I demonstrated that while the empirical results support my theoretical propositions, the models show evidence of structural change. Such structural change was expected given the evolutionary relationships discussed in Chapter 2. In particular, I derived two propositions that predict both an endogenous and an evolutionary relationship between democracy and war at the systemic level:

> P_3: The degree of the negative impact of democracy on war in the international system will become stronger over time as the proportion of democracies increases.
>
> P_5: The degree of the positive impact of war on democracy will decrease over time as the proportion of democracies in the international system increases.

The domestic "rule of law" characteristic of democracies will diffuse throughout the international system as the proportion of democracies increases, moving the world closer to a federation of free states. Also as the proportion of democracies in the system increases, the rules and norms of behavior that stem from democratic forms of government will become more prevalent over time. Democratic hegemonic states facilitate the spread of democratic

norms through the creation of liberal institutions and regimes. As the system moves closer to the federation of free states, the pacifying impact of democracy on war will become stronger over time as democracies become greater in number and as their norms of behavior spread throughout the international system as a whole. Warfare, on the other hand, promotes the development of democratic states due to the success of democracies in wars and the improvement in domestic and international institutions that war brings about over time. However, the degree of the impact of war on the creation of democracy should decline over time, as war becomes less frequent in the international system, and as the democratic international "rule of law" expands.

To determine how the relationship between the proportion of democracies in the system and the proportion of system members fighting interstate wars is evolving, I break the full sample (1816-1988) into 30, 40, and 50-year overlapping samples, creating a series of "sliding windows". I estimate the final reduced model (Table 13) for Model Two in each sub-sample, increasing the year by one across the series.[60] Recall that the final reduced model in Table 13 was the following:

$$\text{Propwar}_t = \delta_0 + \delta_1\text{Propwar}_{t-1} + \delta_2\text{Propwar}_{t-2} + \delta_3\Delta\text{Politydem}_{t-1}\ \delta_4\Delta\text{Politydem}_{t-4} + \delta_5\Delta\text{Lnukexp}_{t-1} + \delta_6\Delta\text{Lnukexp}_{t-2} + \delta_7\Delta\text{Concen}_{t-3} + \delta_8\Delta\text{Concen}_{t-4} + \varepsilon_{1t}$$

$$\Delta\text{Politydem}_t = \beta_0 + \beta_1\text{Propwar}_{t-1} + \varepsilon_{2t}$$

The 30-year sliding window samples begin with estimation of the model above with a sample from 1821-1850.[61] The start year of the sample is increased by one, and the model is

---

[60] Because the empirical results of the two models are similar, I analyze sliding window estimates for only one model (Model Two).

[61] The first year of estimation is 1821 due to five degrees of freedom consumed by the lagged variables in the reduced Model 2 (Table 13).

re-estimated for the second sample, 1822-1851. This continues up through the last sliding window sub-sample, 1959-1988. The 40-year windows range from 1821-1860 to 1949-1988, and the 50-year windows range from 1821-1870 to 1939-1988. This produces a series of parameter estimates that can be plotted across time (for each sub-sample). I select three different window sizes (30, 40, and 50 years) to determine if the results obtained are robust to the size of the sample. A 30-year window makes sense for the smallest sample, given that statistical significance tests can reasonably be conducted with a sample size of 30 or greater. I present the results of the sliding window analysis in this chapter and conclude the study in Chapter 6 with a discussion of my results and avenues for future research.

Sliding Window Analysis

The sliding window parameter estimates for the impact of democracy ($\Delta Politydem_{t-1}$) on war ($Propwar_t$) are presented in Figures 20, 21, and 22 (30, 40, and 50 year windows, respectively). The years displayed in the graph represent the start year for each sub-sample. For example, the parameter estimate for year 1821 is estimated from the sub-sample 1821-1850 for the thirty-year windows (Figure 20), 1821-1860 for the forty-year windows (Figure 21), and 1821-1870 for the fifty-year windows (Figure 22). The first data point in Figure 20 represents the parameter for $\Delta Politydem_{t-1}$ estimated in the model from 1821-1850 (δ_3, Equation 1 above), which is 1.1572. I include 90% confidence intervals around the parameter estimate plots to indicate when the parameter is statistically significant from zero.[62] If zero is contained within the confidence intervals, then the parameter is not statistically

[62] I adopted a larger confidence interval (α=.10) due to the relatively small sample size of each "window".

significant in that sub-sample. I include a horizontal reference line of zero to help indicate when the value of the parameter is statistically significant.

As I expected, the relationship between the proportion of democracies in the system and war is getting stronger over time (P_3), as can be seen in Figures 20-22. The level of democracy in the international system has the largest pacifying affect in the samples including and following World War I,[63] and this negative parameter gets progressively larger across the sliding window estimates. This shows that as the proportion of democracies increases, as the federation of free states enlarges, and as democratic norms become more prevalent in the international system, the pacific impact that democracy has on war gets larger over time. Contrary to some arguments that the democratic peace is primarily a post-World War II phenomenon (Russett, 1993), I find that the relationship is statistically significant prior to that period, particularly after World War I. This provides ammunition in response to realist criticisms of the democratic peace that attribute the long peace in the post-WWII era to superpower relations between the United States and the Soviet Union (Mearsheimer, 1990).

The democracy parameter is positive in some earlier time periods for all three window sizes, which is what Gleditsch and Hegre's (1997) model (derived from the monadic and dyadic level findings) predicts, i.e., that an increase in the proportion of democracies would initially increase the frequency of war (P_2). These parameters, however, are never statistically significant, providing support for the first proposition that as the proportion of democracies increases, the proportion of states fighting interstate wars will decrease in the international system. The empirical findings in Chapter 4 provide support for P_1 as well.

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[63] The relationship between democracy and war first becomes negative and statistically significant in 1914-1943 for the 30-year windows, 1905-1944 for the 40-year windows, and 1894-1943 for the 50-year

Another interesting thing to note is that the impact of democracy on war is negative in the earliest samples (although not statistically significant), becomes slightly positive in the latter part of the 19th century, and then is strongly negative in the most recent sample periods.[64] This trend holds across all three window sizes (30, 40, and 50), although the estimates with thirty-year windows show the greatest short term variance.

The sliding window parameter estimates for the impact of war ($Propwar_{t-1}$) on the proportion of democracies ($\Delta Politydem_t$) are presented in Figures 23, 24, and 25. The effect of war on democracy is almost always positive (supporting P_4) and fairly constant across time. I argued that the positive impact of war on democracy in the system would decline over time (P_5), because as the proportion of democracies increases, the democratic international "rule of law" will become more prevalent, and the international system should experience less war as a result (i.e., become closer to Kant's perpetual peace). Thus the strength of the positive influence of war on the creation of more democratic forms of government should decline over time as the incidence of war becomes less frequent and as the federation of free states enlarges. Contrary to my expectations, however, the impact of war on democracy is fairly constant across the sliding window samples, declining only slightly in the most recent periods. The impact of war on democracy at the systemic level might decline once we account for the most recent wave of democratization following the collapse of the Soviet Union; the parameters presented in Figures 23-25 are estimated only with data through 1988.

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windows.

[64] In the last few samples, the size of the democracy parameter becomes smaller and is not significant. This could be due to the end point of my sample being 1988, which does not include the most recent wave of democratization. In future research, I plan to update my data set to at least 1994 to obtain a

The proportion of system members fighting war in the system ($Propwar_{t-1}$) increases the proportion of democracies most profoundly in the years close to or following World War I and World War II.[65] This makes sense theoretically; the largest wars in history have the biggest positive impact on the change in the proportion of democracies, acting as "shocks" to the overall increasing trend in the proportion of democracies in the system. This is confirmed by an examination of Figure 4 (Chapter 3), where it can be seen that the largest increases in both measures of the proportion of democracies occur after World War I and World War II. The general trends in the systemic war parameters are very similar across all three window sizes, with the 50-year windows again showing the least amount of variance in the movement of parameters (30, 40, and 50).

Figures 26-31 contain the sliding window parameter estimates for the impact of capability concentration ($\Delta Concen_{t-3}$, $\Delta Concen_{t-4}$) on war ($Propwar_t$) for 30, 40, and 50-year sample sizes. The parameter for concentration is negatively related to war in every period except from the 1860's to the early 1920's. The parameter for power concentration (lag four) is strongly statistically significant in both the earliest and most recent periods, although the third lag of concentration is not statistically significant in earlier periods. And while concentration is positively related to war in a few time periods, it never reaches standard statistical significance levels.

The power preponderance hypothesis is supported (P_6) given that the parameter for concentration is negatively and significantly related to the proportion of system members

---

more accurate picture of the recent impact of democracy on war.

[65] Note the significant spikes in all three graphs (Figures 23-25) in the samples that start in the late 1800's and contain World War I. The 30 and 40-year windows (Figures 23-24) also show significant positive spikes in the war parameter in samples containing World War II.

fighting interstate wars, especially in the first 50 years of the sample and in the 20th century as well. This pacifying influence of concentration on war has been extremely stable in the 20th century; the parameter has shown very little temporal fluctuation in this time period. Contrary to Singer, Bremer, and Stuckey (1972), I do not find any evidence of a positive relationship between systemic capability concentration and war in the 19th century. In fact the strongest negative relationship between concentration and war in the system is observed during the first half of the 19th century. For example, in Figures 30 and 31, the negative parameter for power concentration takes on its largest statistically significant values in the samples starting in 1821 through the early 1860s. While the parameter remains negative and statistically significant in the 20th century samples, its substantive impact is much smaller.

Another interesting thing to note in Figures 26-31 is that the parameter for systemic capability concentration fluctuates substantially in samples starting in the 1860s up through samples ending in the early 1920s. In fact, the parameter becomes sharply negative and then positive prior to World War I, although the standard errors for the concentration variable increase making the relationship insignificant in this time period in all 6 graphs. When one examines the overall trends in major power capability concentration (Figure 9), it is clear that the level of concentration does not change very much from approximately 1861-1915. This constant level of concentration translates into a differenced score of zero (ΔConcen), which helps to explain both the wild movements in the parameter and the lack of statistical significance of the concentration parameters in this time period.

In Figures 32-35, I present the sliding window parameters estimates for each parameter discussed above for the three window sizes. For example, Figure 32 compares the

sliding window estimates of the impact of democracy on war (lag one) across 30, 40, and 50 year samples. The parameters follow the same overall trend, regardless of the window size, although the 30-year samples contain more variation in the parameters than the 50-year samples as I noted above. Comparisons across the different sliding windows sizes increases confidence in the overall trends in the parameters discussed in this chapter.[66]

Conclusion

One key feature of the theoretical model developed in Chapter 2 is not only the endogenous relationship between democracy and war at the systemic level, but also the evolutionary relationship between these variables. I argued that the pacifying impact of democracy on war should get stronger over time as the federation of free states enlarges, and as democratic norms become more prevalent in the international system. Also, while war in the system promotes the development of democratic forms of government, I argued that its substantive impact should decline over time as the proportion of democracies increases and as war becomes less frequent overall. I tested these evolutionary arguments in this chapter by splitting the 1816-1988 sample into 30, 40, and 50-year overlapping sliding window sub-samples. I then estimated Model Two from Chapter 4 in each sub-sample, plotting the resulting parameter estimates for each "window". Not only is this estimation approach unique in that it does not assume a constant relationship between variables over time, it also produces many interesting substantive results.

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[66] The sliding window results presented in this chapter represent snapshots of the parameters at overlapping points in time. An alternative method for analyzing models with time varying parameters is Kalman filter analysis. Unlike sliding window techniques, the Kalman filter updates information across the entire time period. In Appendix B, I present some preliminary results of Kalman filter estimates for Model 2. The Kalman filter analysis provides support for the empirical findings discussed in this chapter.

Sliding window estimation of the impact of the proportion of democracies in the system on the proportion of system members fighting wars garnered support for Proposition 3. The pacifying impact of democracy has grown stronger over time, and its largest effect occurs after World War I. I did not find such strong support for Proposition 5. While I expected the positive impact of war on the growth of democratic forms of government to decline over time, I found that the impact has remained fairly constant and significant.

Finally, I presented sliding window analysis for the relationship between major power capability concentration and the proportion of system members fighting wars. The results in the chapter lend greater support to the power preponderance theoretical approach that predicts increasing power concentration to lead to greater systemic peace. One interesting finding was that the negative relationship between concentration and war is strongest in the first 50 years of the sample (19th century), which contradicts earlier studies that found a positive relationship between power concentration and systemic war in the 19th century. Also, this relationship is fairly constant across time, contrary to Singer, Bremer, and Stuckey's finding of an inter-century (19th, 20th) difference.

I turn now to the final concluding chapter in this study where I summarize the major contributions and findings of my work and I offer several suggestions for future research and extensions.

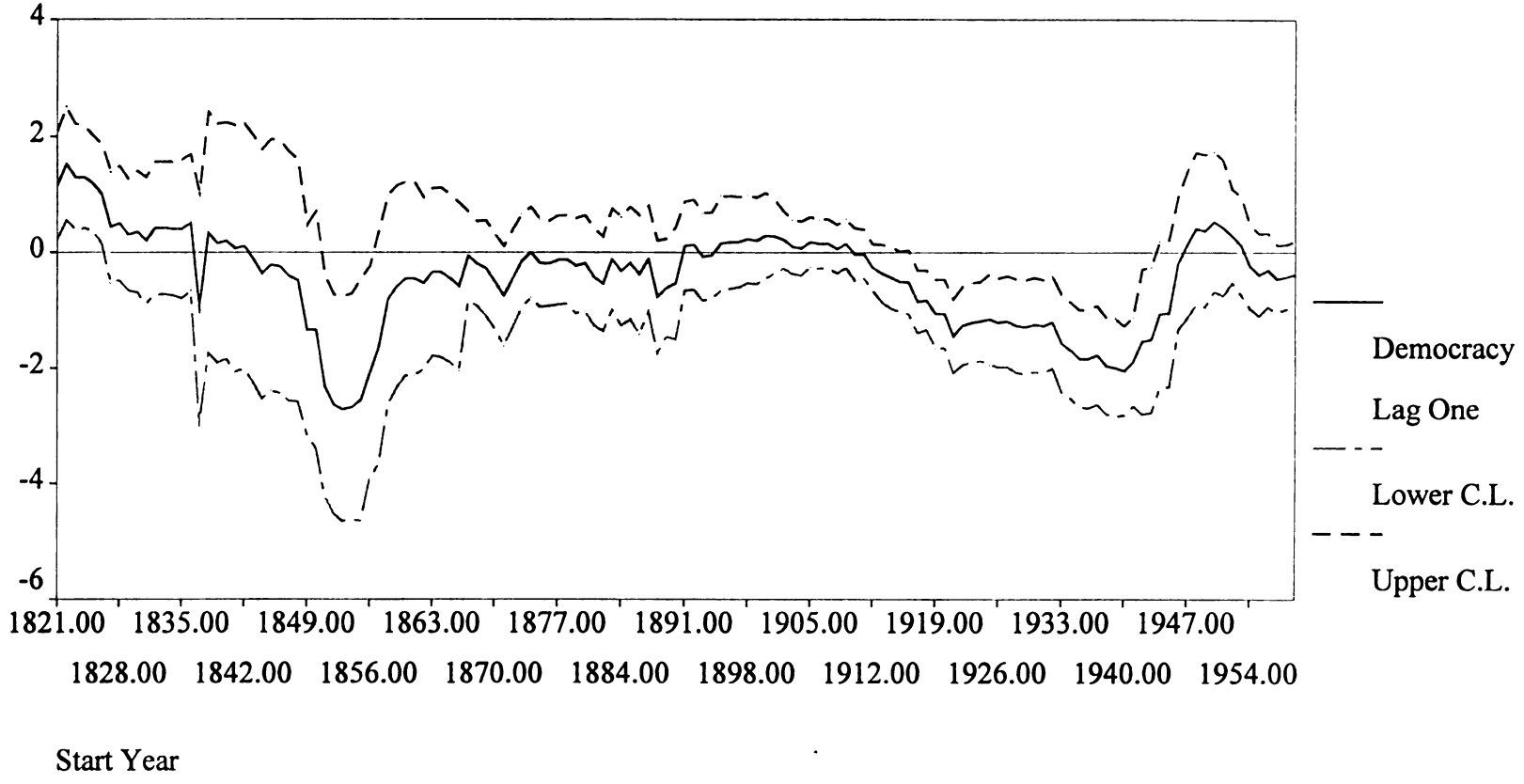

Figure 20 - The Evolving Impact of Democracy on War

30 Year Sliding Windows

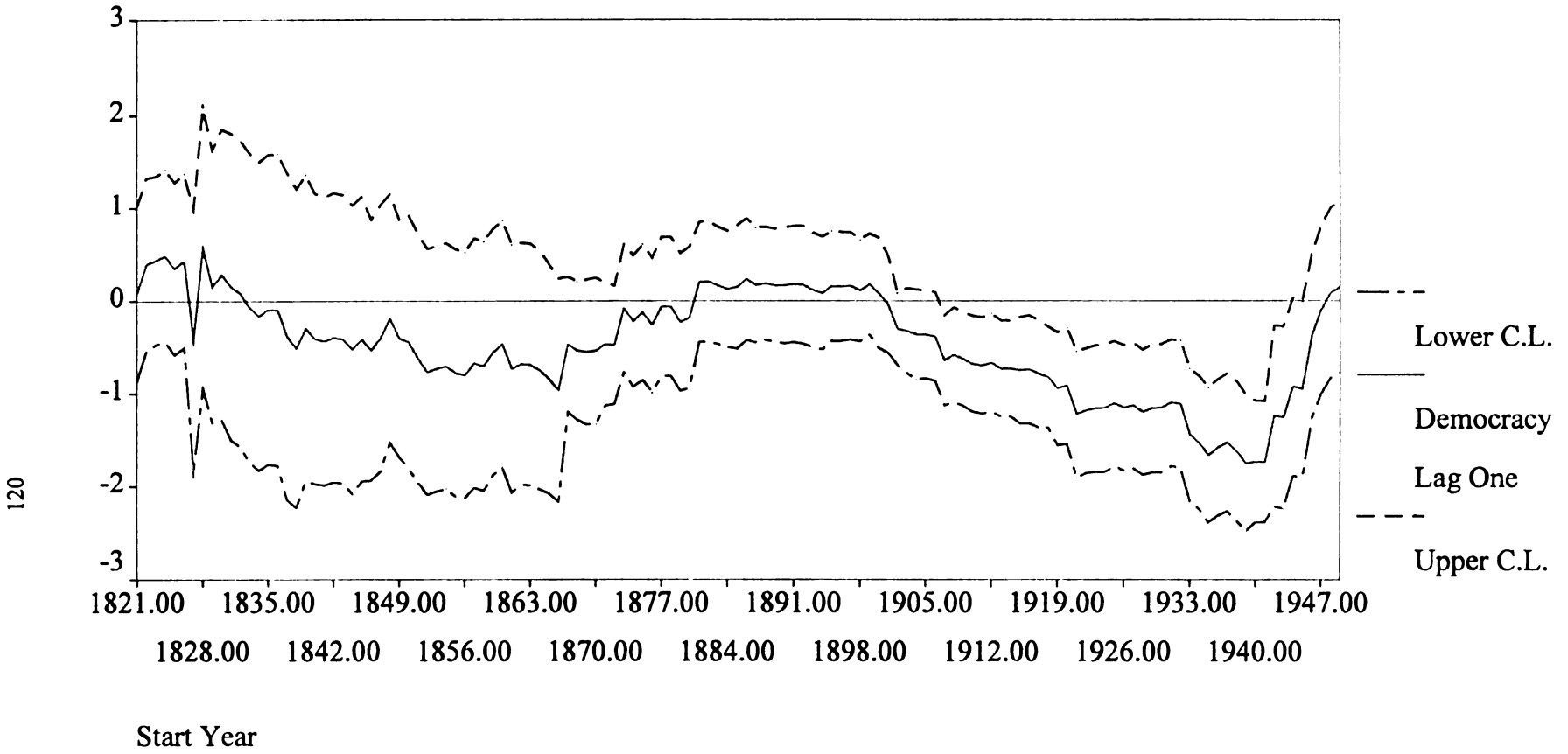

Figure 21 - The Evolving Impact of Democracy on War

40 Year Sliding Windows

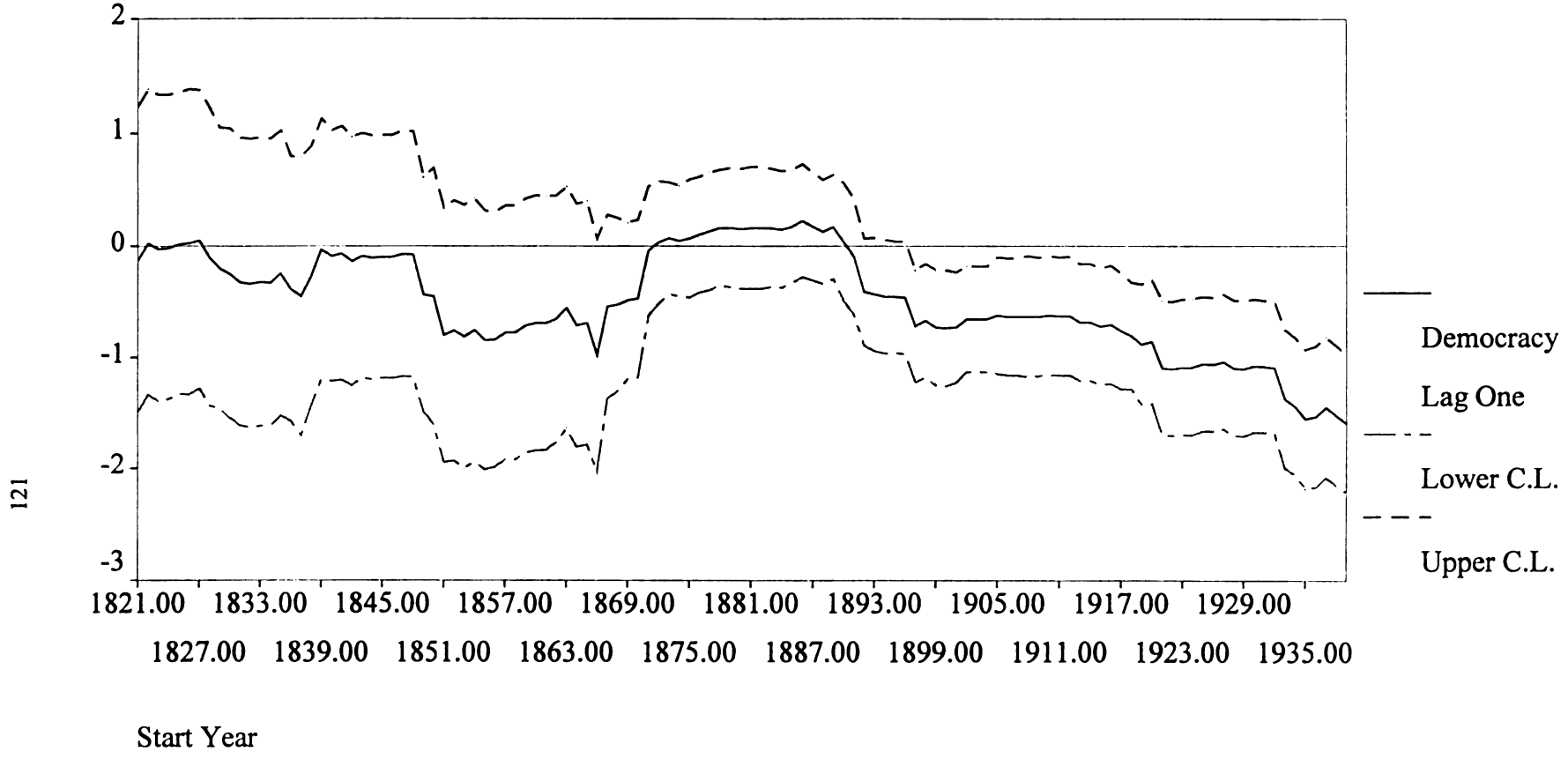

Figure 22 - The Evolving Impact of Democracy on War

50 Year Sliding Windows

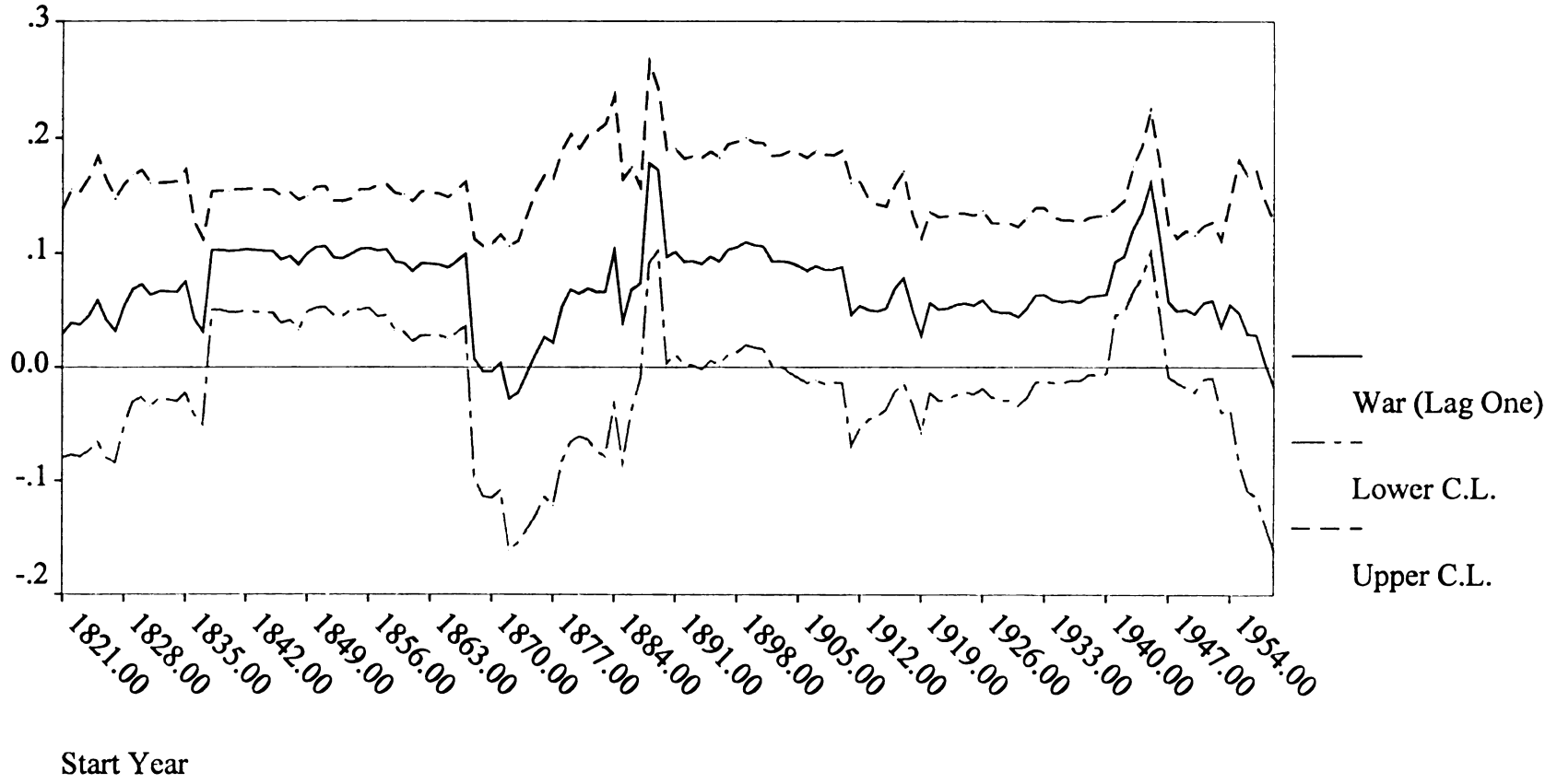

Figure 23 - The Evolving Impact of War on Democracy

30 Year Sliding Windows

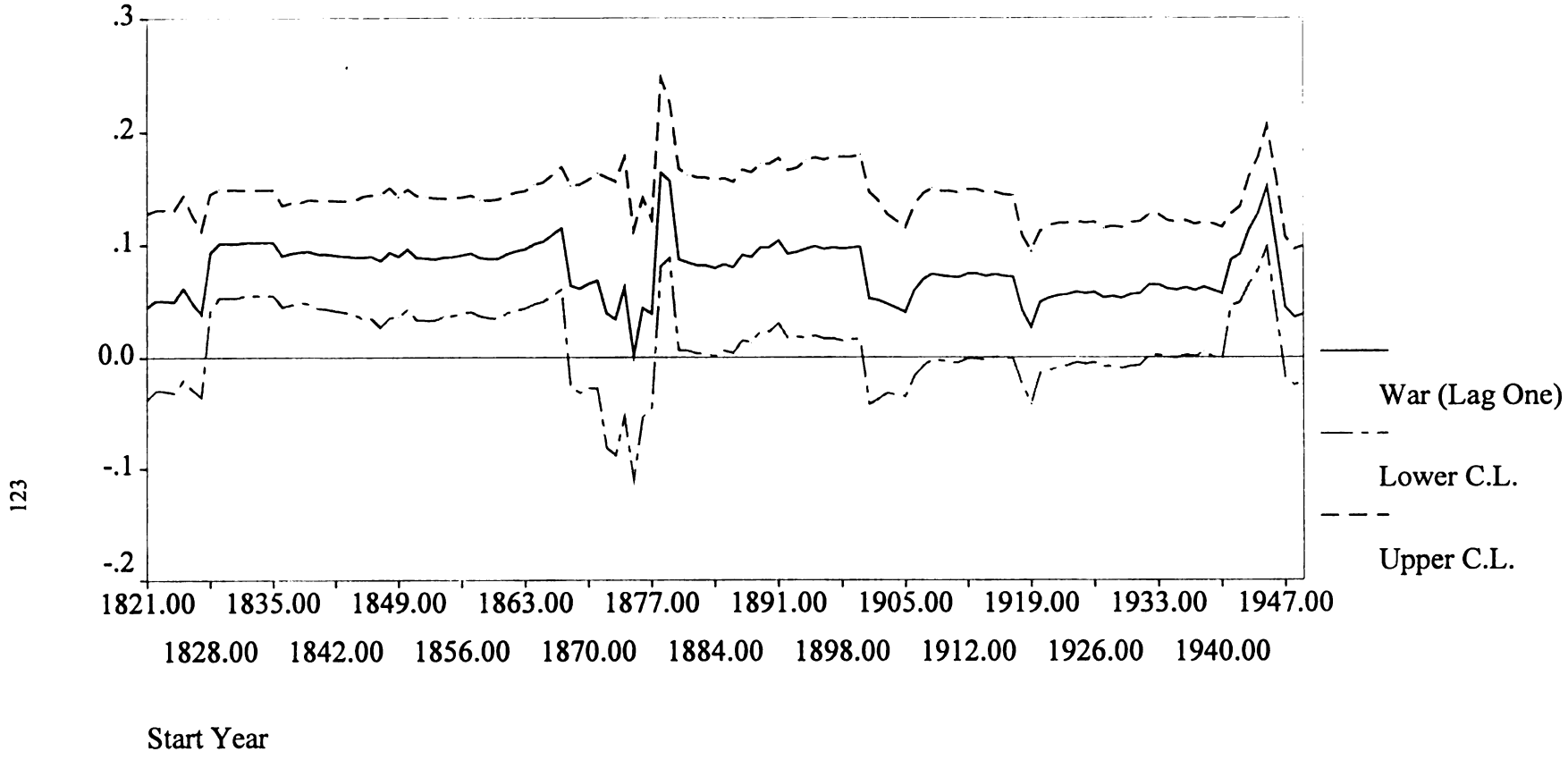

Figure 24 - The Evolving Impact of War on Democracy

40 Year Sliding Windows

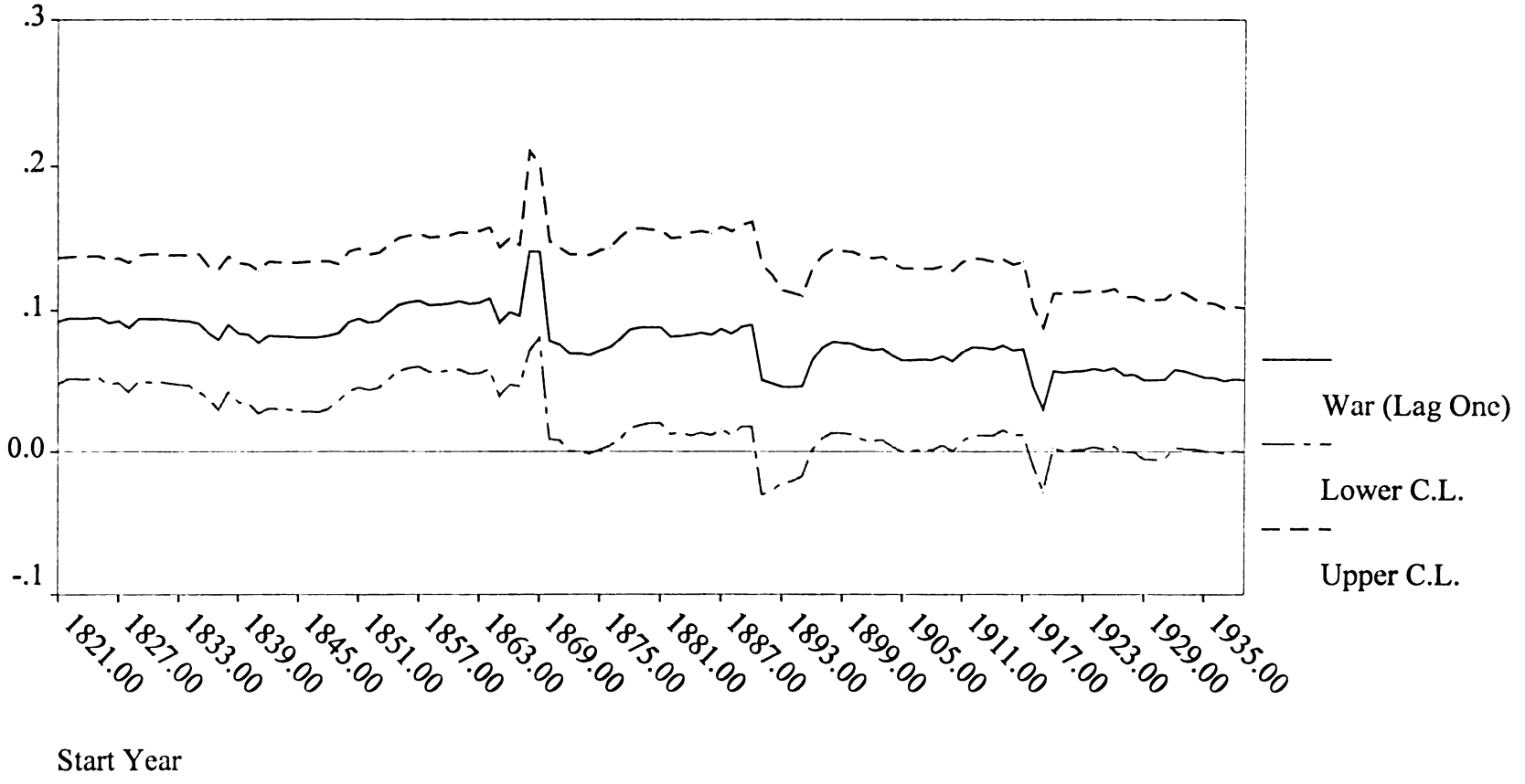

Figure 25 - The Evolving Impact of War on Democracy

50 Year Sliding Windows

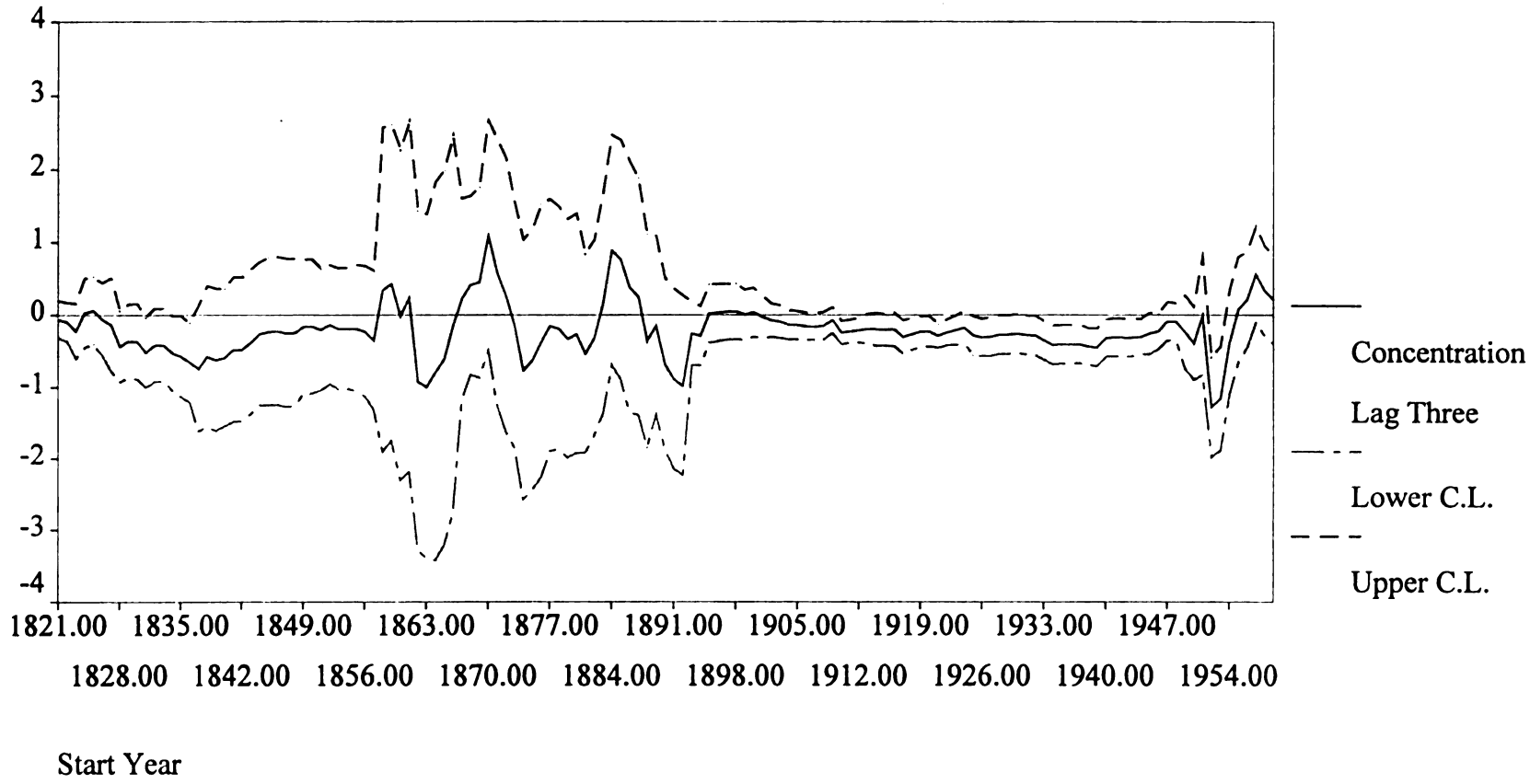

Figure 26 - The Evolving Impact of Concentration on War

30 Year Sliding Windows

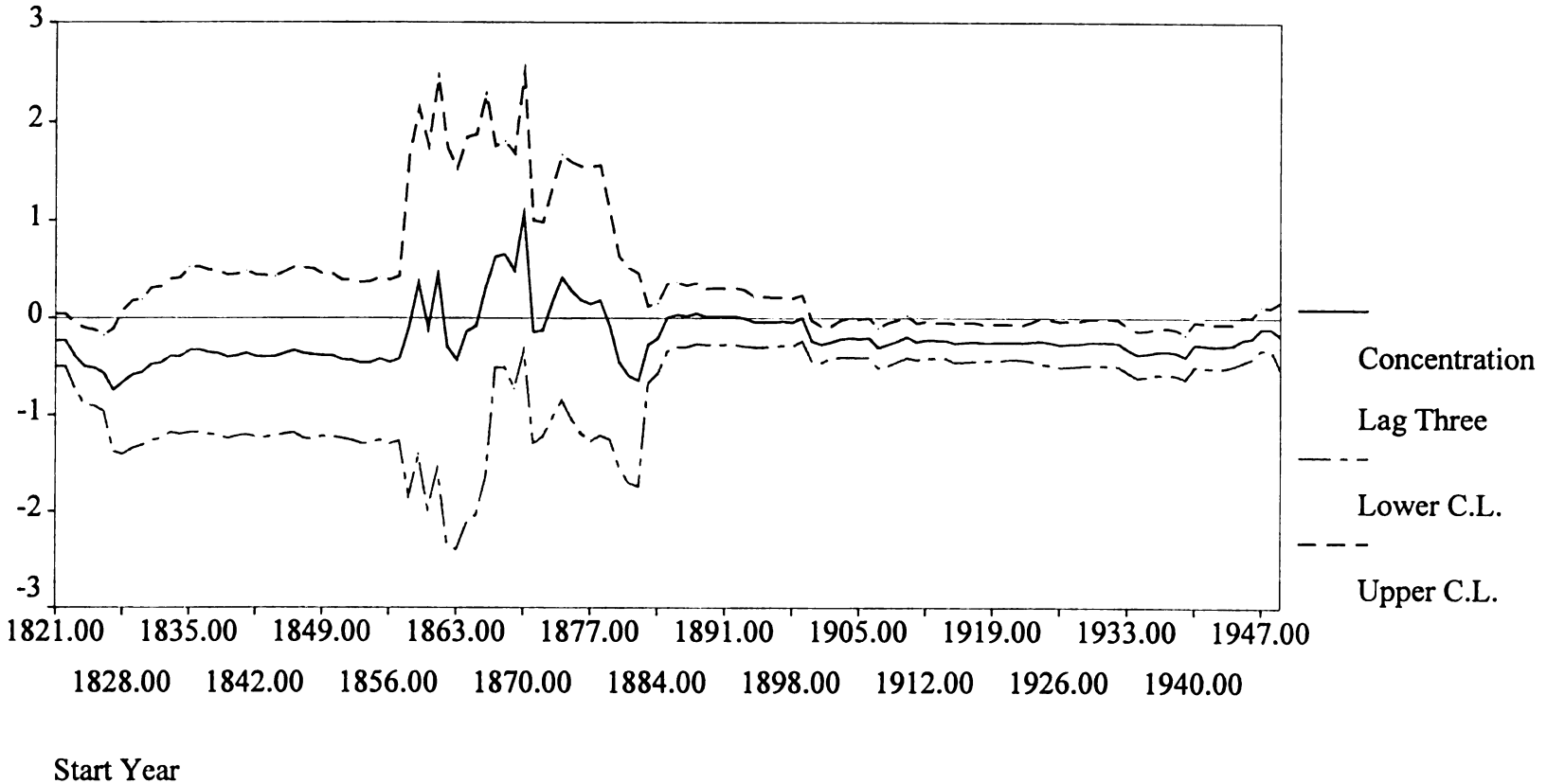

Figure 27 - The Evolving Impact of Concentration on War

40 Year Sliding Windows

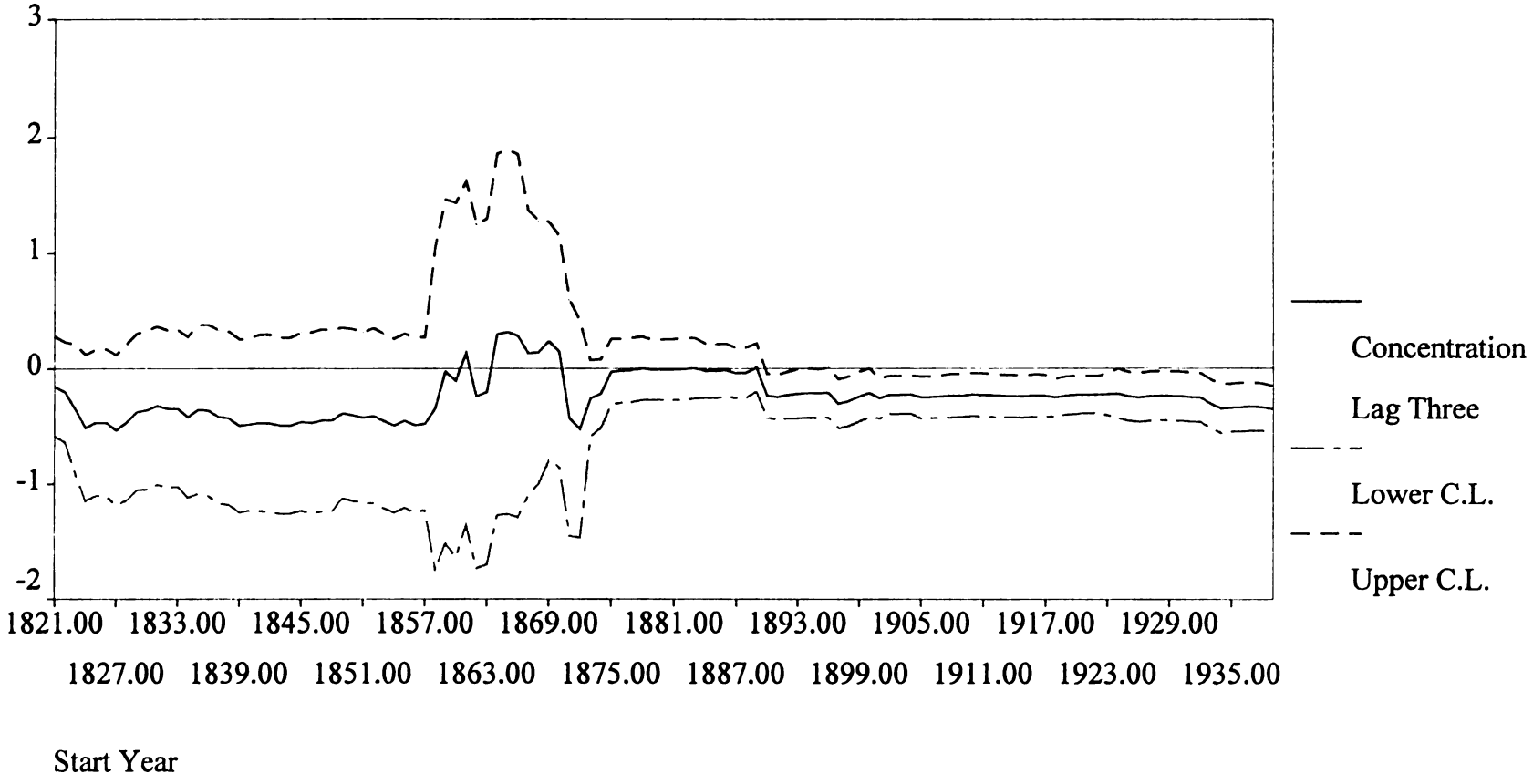

Figure 28 - The Evolving Impact of Concentration on War

50 Year Sliding Windows

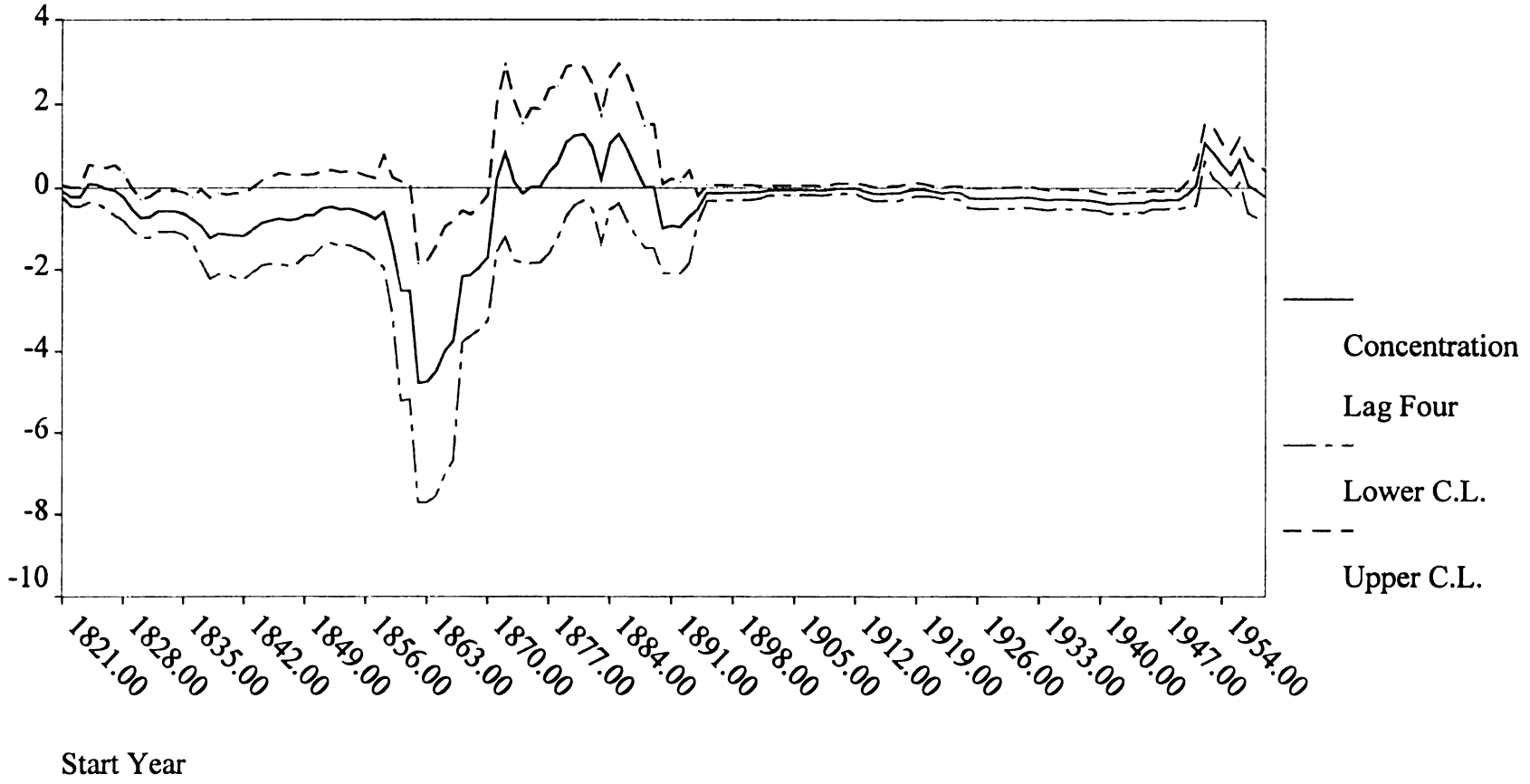

Figure 29 - The Evolving Impact of Concentration on War

30 Year Sliding Windows

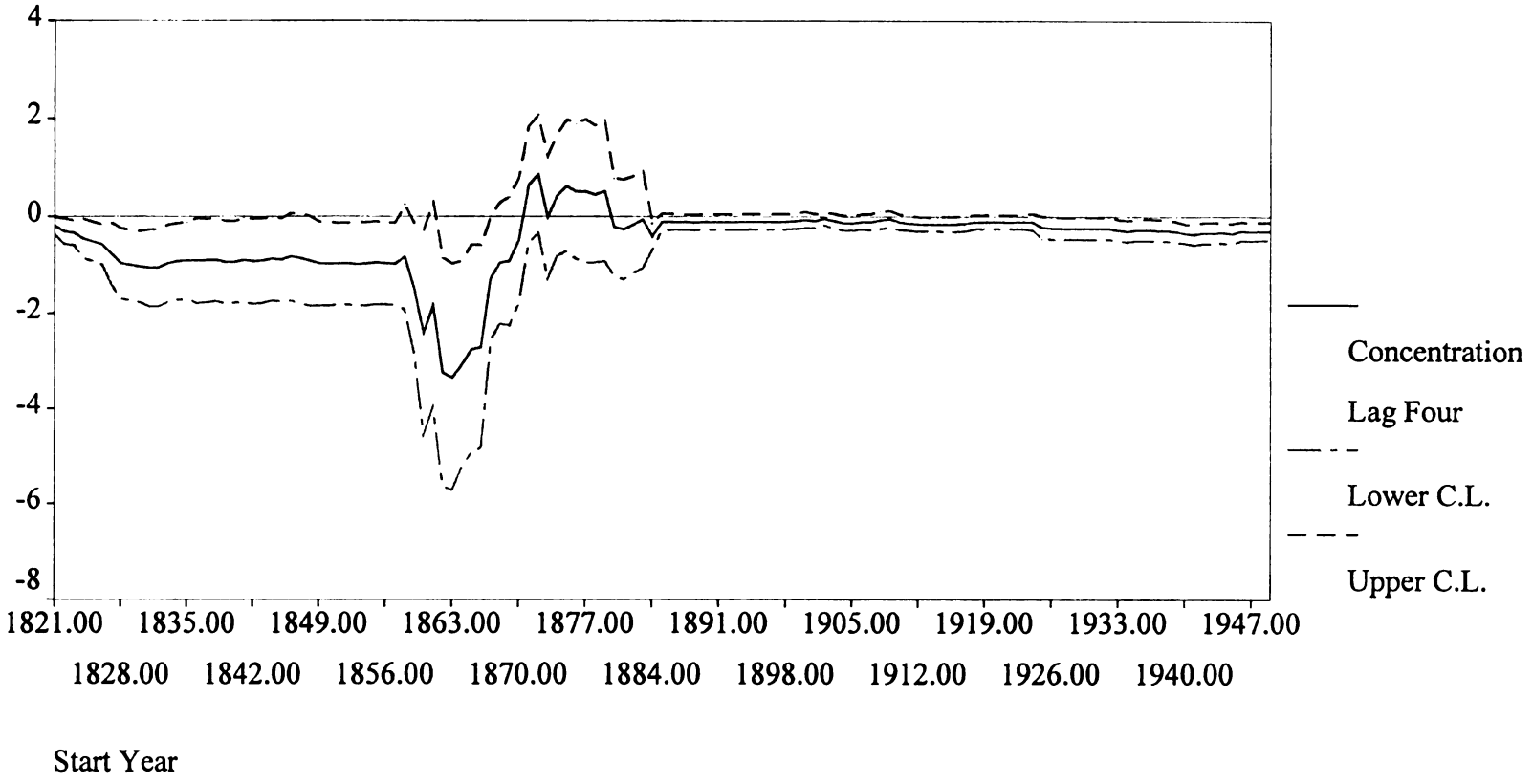

Figure 30 - The Evolving Impact of Concentration on War

40 Year Sliding Windows

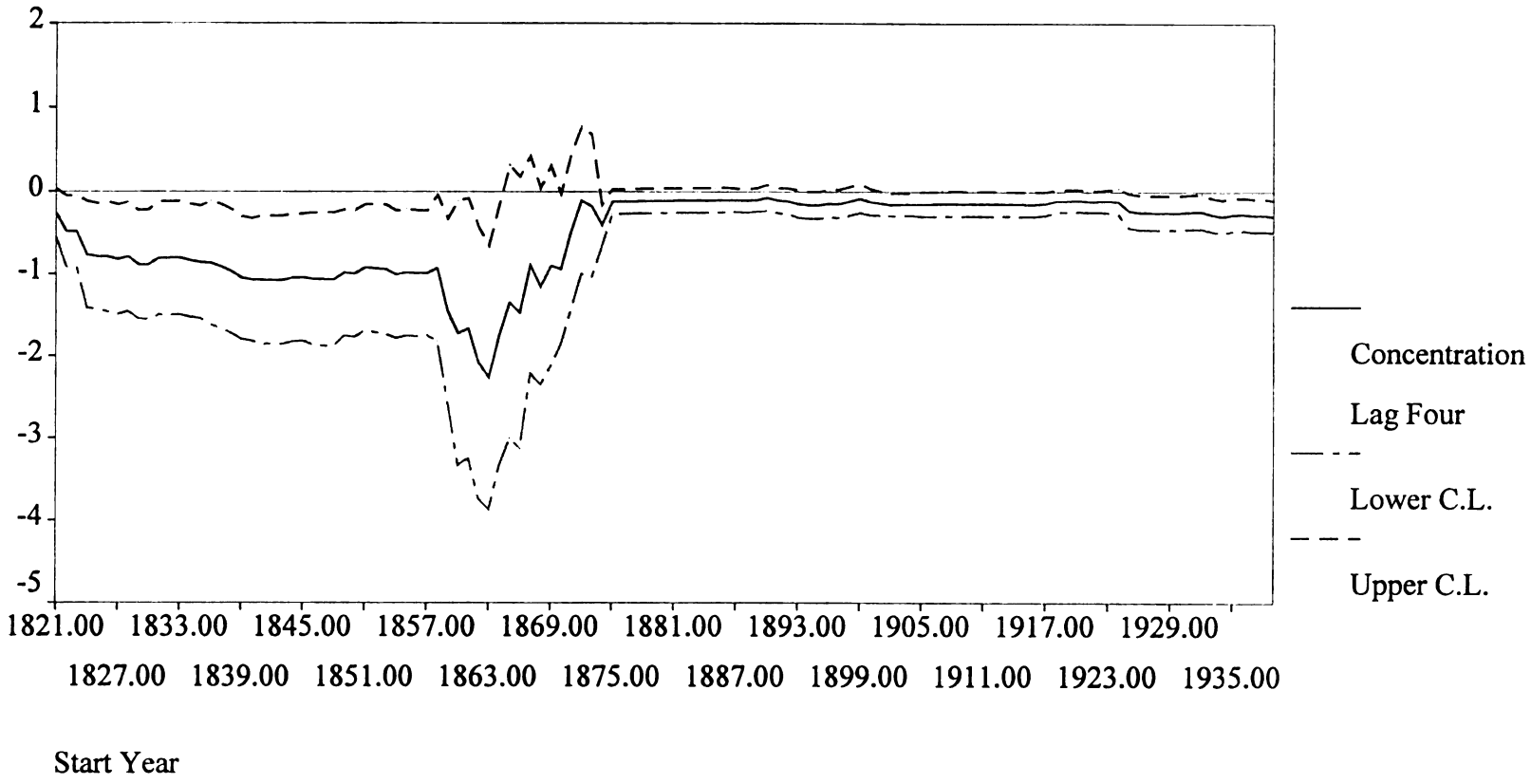

Figure 31 - The Evolving Impact of Concentration on War

50 Year Sliding Windows

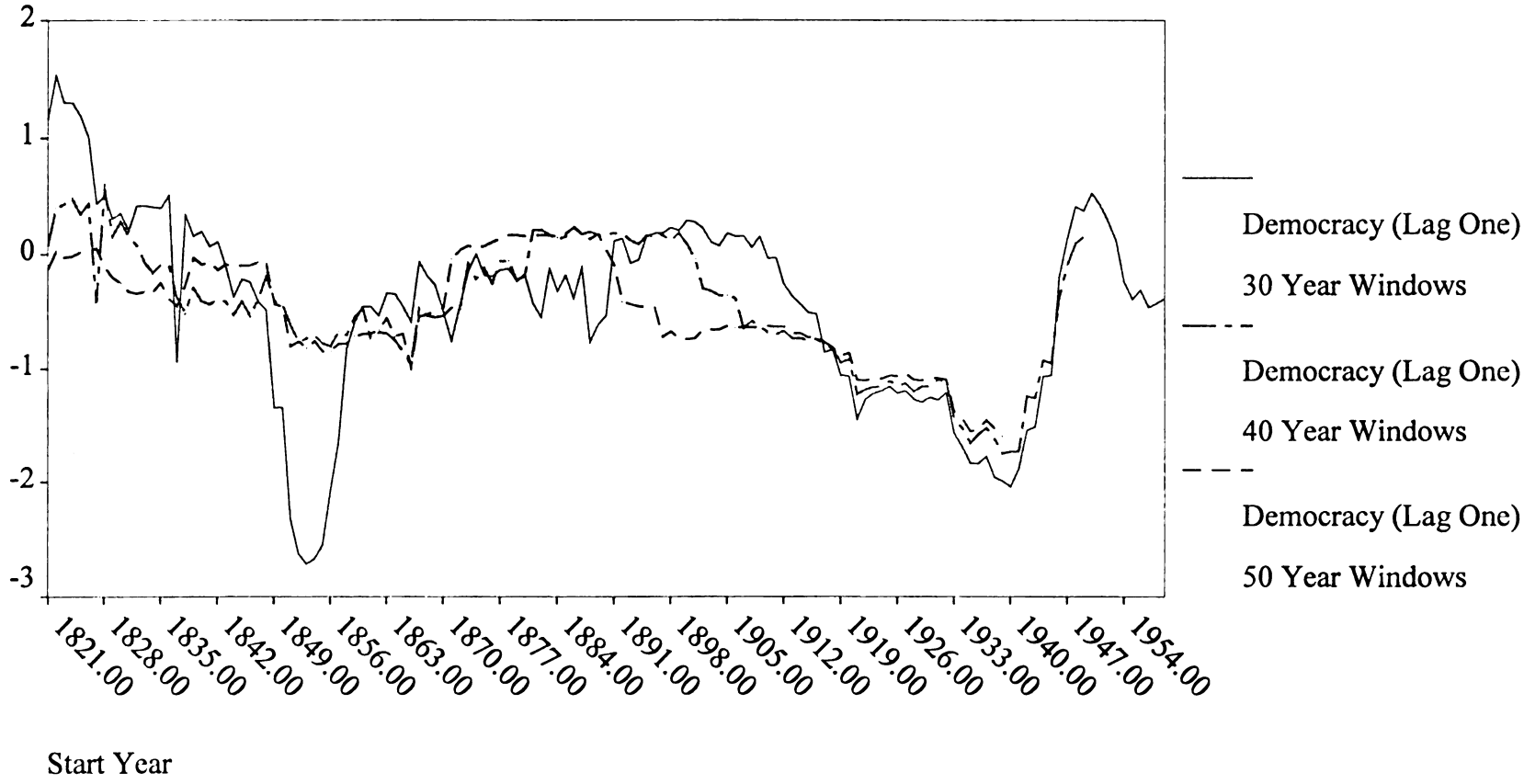

Figure 32 - Comparison of 30, 40, and 50 Year Sliding Windows

The Impact of Democracy on War

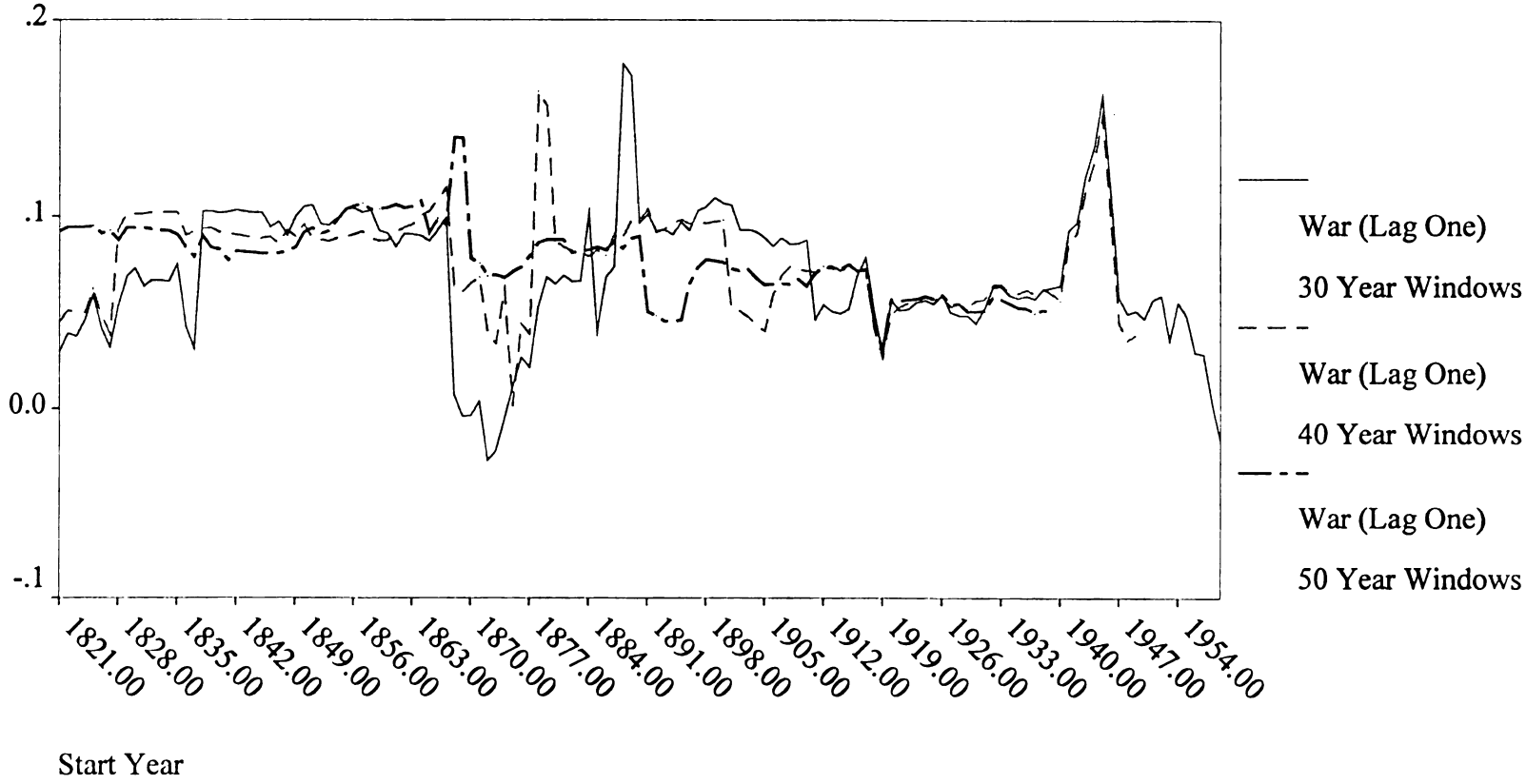

Figure 33 - Comparison of 30, 40, and 50 Year Sliding Windows

The Impact of War on Democracy

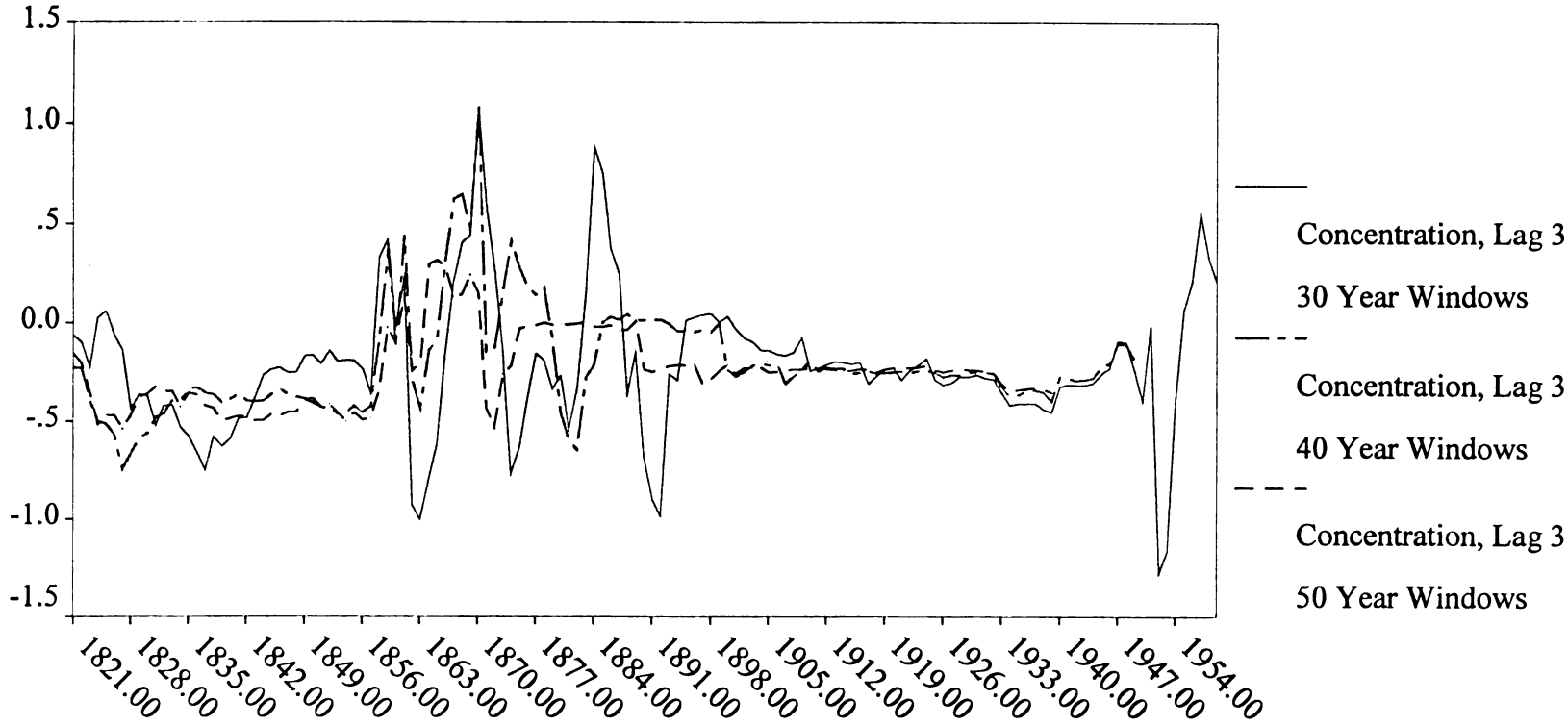

Figure 34 - Comparison of 30, 40, and 50 Year Sliding Windows

The Impact of Concentration on War

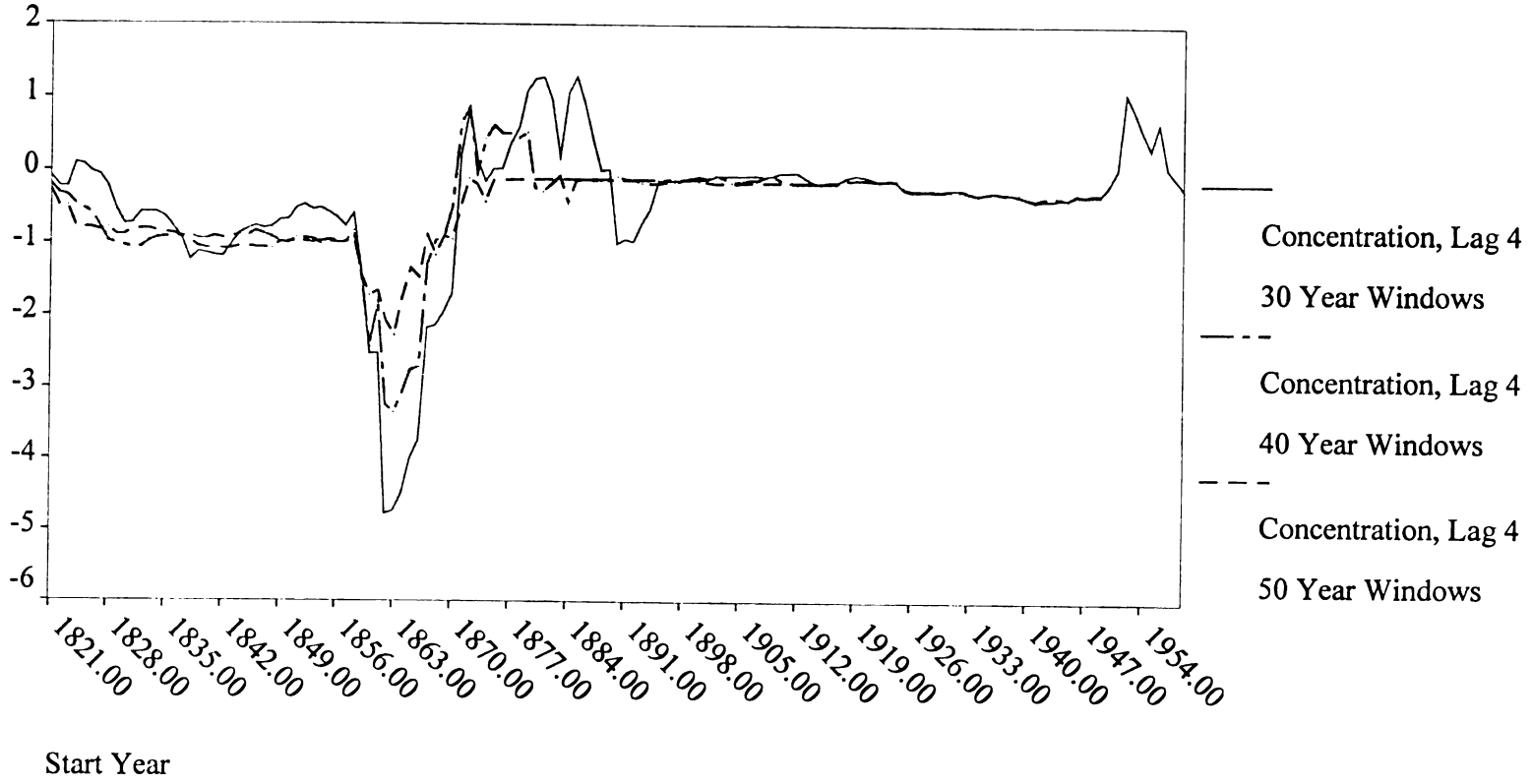

Figure 35 - Comparison of 30, 40, and 50 Year Sliding Windows

The Impact of Concentration on War

CHAPTER 6

CONCLUSION

One of the most striking changes in the international system in the past two centuries has been incredible growth in the number of democratic states. Today democracies constitute a majority of states in the international system, and the absence of war between democracies (the democratic peace) paints an optimistic view of future peaceful international relations as the trend towards greater democratization in the world continues. Many scholars and policy makers have posited that the very nature of international relations could be transformed as a result of the growth in democracy and peace between democratic states. Russett (1993:137-138) expresses this sentiment well, "if enough states become stably democratic...then there emerges a chance to reconstruct the norms and rules of the international order to reflect those of democracies in a majority of interactions." The notion that domestic characteristics of states have the potential to alter the rules and norms of interaction in the system is an idea that challenges the leading systemic theoretical approach in international relations, neorealism. Neorealists such as Waltz argue that states are like units, being motivated by the pursuit of power and security concerns. The differentiation of states in the system (such as regime type), according to this approach, has no impact on outcomes in world politics, most notably war.

In this dissertation, I compare these two contrasting views of international politics by developing a systemic theory of the relationship between democracy and war. Contrary to neorealist theories of international politics, my theoretical approach is evolutionary, derived from the writings of Immanuel Kant. In Chapter 1, I assert that scholars often assume that peace between democracies will translate into greater systemic peace as the proportion of democratic states increases (Small and Singer, 1976; Starr, 1992; Singer and Wildavsky, 1993). Others have treated the systemic level relationship between democracy and war as a puzzle that emerges from two paradoxical findings in the literature (e.g., Maoz and Abdolali, 1989; Bueno de Mesquita and Lalman, 1992; Gleditsch and Hegre, 1997): 1) democracies do not fight wars against each other (the dyadic finding), but 2) democracies are just as war-prone overall as nondemocracies (the monadic finding). I criticized the tendency to aggregate findings across levels in the democratic peace literature, advocating instead the development of a systemic theory of the relationship between democracy and war.[67]

In Chapter 2, I develop a systemic theory of war and democracy, addressing four primary questions: 1) What is the *systemic level* relationship between democracy and war, and how is this relationship *evolving* over time? 2) Are the traditional *rules* and *norms* of the international system described by neorealists being transformed as the international system becomes more democratic? 3) How do economic relations between states in the system influence the systemic level relationship between democracy and war over time? and 4) How

[67] One of the biggest problems with aggregation is that the assumptions made depend on the validity of empirical results at each level. The monadic level finding that democracies fight in as many wars as nondemocracies has been challenged recently (e.g., Benoit, 1996), casting doubt on the validity of systemic conclusions drawn from such assumptions.

is the level of war in the international system related to the concentration of power between nation-states, and how is this relationship changing over time? In this concluding chapter, I discuss each of these questions focusing on my theoretical approach for answering each question, the results obtained in empirical analysis, and extensions for future research.

The Systemic Level Relationship between Democracy and War

The systemic theoretical model of democracy and war developed in Chapter 2 is based largely on Kant's philosophy of perpetual peace. My theory has two key features: 1) I argue that the systemic level relationship between democracy and war is endogenous and 2) I contend that this systemic level relationship between democracy and war is an evolutionary process.

First, I argue that the proportion of democracies and the proportion of nations fighting interstate wars are endogenously related, i.e., both variables cause changes in each other across time. Like the vast majority of scholars in the democratic peace literature, I argue that as the proportion of democracies in the system increases, the proportion of states fighting interstate wars will decrease because the "rule of law" that democracies promote moves the system closer to a federation of free states and decreases the level of uncertainty that arises in a state of war (or anarchy). The additional insight that Kant offers is that democracy promotes peace, but war itself serves as the greatest force for the creation of democratic or republican forms of government. War creates and destroys nations, and the experience of war improves the internal institutions of states over time. War is also positively related to democracy at the systemic level because democracies tend to win the

wars they fight, making them better able to promote democracy and democratic institutions/regimes in the aftermath of war.

In Chapter 4, I test these theoretical arguments by estimating two simultaneous equations time series models from 1816-1988; the proportion of democracies in the system and the proportion of states fighting interstate wars are the two endogenous variables in the models. The results confirm my theoretical propositions (P_1, P_3). I find that democracy has a strong negative impact on the proportion of nations fighting war and that war in turn has a positive and significant effect on the proportion of democracies in the international system. The conclusion that war is positively related to the development of democracy is a novel empirical finding in the international relations literature, and it provides support to Kant's theoretical arguments about war serving as an impetus for democracy. While other scholars have acknowledged that democracy and war are endogenously related (Gates, et al, 1996; Thompson, 1996; Maoz, 1997), they contend that the relationship between war and democracy is negative (the reverse of what I argue). In other words, the greater number of wars that states participate in, the less likely they are to develop democratic institutions because war tends to concentrate power in the hands of the state. Also, personal freedoms tend to be restricted during warfare. One important difference between my study and the others cited above is that I examine the relationship at the systemic level while Thompson (1996) and Maoz (1997) examine the relationship at the dyadic and regional levels. One important extension of the analysis presented in this study is to test for endogeneity between war and democracy at other levels of analysis, most notably the monadic level. Analyses conducted below the systemic level of analysis have the

advantage of taking into account regional or geographic effects of war and economic development on the development of democracy.

It might also be important to distinguish between democracy and democratization in future research. Both measures of democracy employed in this study (Doyle's measure, Polity III measure) code a nation as democratic when it has reached a fairly advanced stage of the democratization process. It would be interesting to empirically examine the relationship between war and the process of democratization. This could lend insight into some of the recent debates on whether newly democratizing states are more war-prone than autocratic states (Mansfield and Synder, 1995; Enterline, 1996; Thompson and Tucker, 1997).

Not only does Kant view war as an impetus for the creation of republics, he also contends that war is the greatest force creating structural change. Neorealists, on the other hand, view changes in the distribution of capabilities among nations as the biggest force for structural change. According to Kant, the state of war produces changes in the units that comprise the system, and the internal makeup of states in turn changes the system as nations move closer to a federation of free states. I found strong empirical support for Kant's argument that war is the biggest force for structural change. In Chapter 4, I conducted Chow tests for structural stability, and these tests confirm that the largest structural breaks in the last two centuries occur after World War I and World War II. For example, the sliding windows analyses in Chapter 5 demonstrate that the negative impact of democracy on war at the systemic level becomes significant after World War I. I also find that the positive impact of war on the proportion of democracies in the system is largest during the two world wars.

One of the most insightful aspects of the systemic theory developed in Chapter 2 is that I not only expect the relationship between democracy and war to be endogenous, but I also expect the relationship to be characterized by an evolutionary process. Very few scholars in the international relations community consider the possibility for evolutionary relationships in the system, and none have been tested empirically at the systemic level with appropriate statistical techniques that can account for time-varying parameters.[68] I test two evolutionary propositions (P_3, P_5). The first proposition states that the degree of the impact of democracy on war at the systemic level will become stronger over time as the proportion of democracies increases, as the system moves closer to a federation of free states, and as the norms that are characteristic of democracies become more widespread in the system at large. I also hypothesize that the positive impact of war on democracy should decline over time as the international "rule of law" extends making war less frequent overall in the system. Chow tests for structural stability conducted at the end of Chapter 4 confirm the presence of structural breaks in the models estimated for the whole time period. The Chow tests imply what is expected theoretically, i.e., that the relationship between the proportion of democracies and the proportion of system members fighting interstate wars varies over time.

The evolutionary relationship between democracy and war presented in Chapter 2 provides a nice extension of Waltz's ideas on competition and socialization. According to Waltz, socialization creates norms of behavior that constrain states' decisions, whereas competition encourages nations to adopt successful strategies in world politics. For Kant,

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[68] One exception is Paul Hensel's work on the evolution of interstate rivalry, although his analysis is conducted at a different level of analysis (dyadic) than the present study.

the state of war or anarchy is at one end of a continuum and the rule of law is at the other. International relations may be viewed historically as making erratic progress along this continuum. The processes of competition and socialization produce convergence in state behavior in the neorealist framework. Kant adds the notion that this process is evolutionary, promoting convergence towards the international rule of law.

To test the evolutionary propositions discussed above, I adopt a novel empirical estimation procedure, sliding window analysis. I split the entire sample (1816-1988) into several overlapping sub-sambles or "windows". I estimate one of the empirical models from Chapter 4 in each window for sample sizes of 30, 40, and 50-year windows. I then plot each parameter over time to determine how the relationships between variables in the model are changing. I found empirical support for P_3, namely that the pacific impact of democracy on war at the systemic level has increased over time. Also this relationship becomes statistically significant after World War I, which supports Kant's contention that wars produce the largest structural changes in the system. While I anticipated that the substantive impact of war on democracy would decline over time, I discovered that the relationship has remained significantly positive and fairly constant from 1816-1988. One limitation of the results presented in Chapters 4 and 5 is that the data ends in 1988, excluding the most recent wave of democratization. Future research will extend the time period to at least 1994 to determine if the degree of the impact of war on democracy has remained constant or has indeed declined in the last ten years.

The significant changes in the parameters estimated in Chapter 5 point more broadly to a shortcoming in many empirical papers in the international relations literature. It is fairly common practice to report temporal differences between the 19th and 20th

centuries, especially among the Correlates of War research community.[69] This temporal break point is extremely arbitrary, having no real basis in international relations theory. The time series techniques utilized in this study help to identify these structural breaks more systematically through the use of Chow tests. I find, for example, that both World War I and World War II represent important structural break points in the systemic model tested in Chapter 4. In addition to identify these break points empirically, the sliding window estimation procedure in Chapter 5 and the Kalman filter estimation in Appendix B can be used to model relationships that are evolving or changing over time. To assume that a single model captures the whole Correlates of War time period (1816-1992) is not plausible for most theories of international politics.

The Evolution of Rules and Norms in the International System

In Chapter 2, I contend that the primary consequence of the endogenous, evolutionary relationship between democracy and war at the systemic level is that the norms and rules characteristic of democratic institutions will become more prevalent in the international system as a whole. I expect democratic norms to become more prevalent in the international system over time for two primary reasons. First, the greater strength and success of democracies over time encourages other states to liberalize (competition), while the rule of law externalized by democracies in their relations with each other (socialization) creates a more democratic international rule of law. Thus the greater the proportion of democracies in the international system, the more likely the traditional "rules" of the

[69] For example, Small and Singer (1982) make numerous inter-century comparisons throughout *Resort to Arms*.

system described by realists will become replaced by more liberal and cooperative rules of interaction like we see between democratic nations. Second, the hegemon as a liberal, democratic state serves an important role in promoting democratic norms by creating and maintaining liberal regimes and institutions, such as the World Trade Organization. The hegemon also furthers the transmission of democratic norms to the system as a whole by engaging in high levels of trade and other economic interactions with the vast majority of nation-states. Cooperation in economic and cultural spheres strengthens the peaceful and cooperative systemic norms of behavior that stem from the domestic and international "rule of law".

I empirically test the endogenous and evolutionary relationship between the proportion of democracies and the proportion of system members fighting wars, although I do not directly measure the extent to which democratic norms are prevalent in the international system. Rather, I make an assumption that the larger the proportion of democratic states, the more extensive the international "rule of law" and thus the more widespread democratic norms and rules. One interesting extension of this research would be to examine the historical evolution of systemic norms and rules more systematically. The first step in that process is to determine what types of norms and rules democracies transmit from their domestic rule of law to the international rule of law. Several examples of democratic norms were discussed in Chapter 2, such as respect for political opposition and respect for human rights. Many scholars in the democratic peace literature are testing the normative or cultural theoretical approach by examining the types of norms democracies utilize in their interactions with other democracies. Dixon (1993, 1994) and Raymond (1994, 1996) find that democracies are more likely to use third-party arbitration

for dispute settlement, although the use of arbitration does not necessarily translate into greater success for dispute resolution (Raymond, 1996). It would be interesting to determine the extent to which such democratic norms and rules are being adopted by nondemocratic states, or are becoming the "norm" in the international system as a whole.

One norm that democracies may transmit to the international system, for example, is a respect for territorial boundaries. Kacowicz (1995:265) finds support for this contention, asserting that: "well-established democracies do not fight each other since they are conservative powers, usually satisfied with the territorial status quo within and across their borders." He argues that well-established democracies are satisfied with the territorial status quo for two primary reasons. First, as democracy becomes more institutionalized (established), the number of nationalist and irredentist claims outside homeland territorial boundaries will decrease. His second argument stems from work on power transition theory; democracies have tended to be the most powerful states in their regions, often creating the regional status quo. Thus they are more likely to be satisfied with the status quo, creating a situation where democracies have few or no incentives to fight each another. Lemke and Reed (1996) also attribute peace between democracies to their satisfaction with the international status quo.[70] An examination of the temporal trends in territorial claims and territorial disputes would help shed light on the question of whether this democratic norm is becoming a systemic norm as well.

[70] Lemke and Reed (1996:145) define the status quo in the international system as "the rules, norms, and accepted procedures that govern international relations."

I argued in Chapter 2 that Kant has a different view on anarchy than Waltz. For Waltz, anarchy is simply the lack of central authority in the international system, whereas Kant views anarchy as the state of war, a state that impedes the categorical imperative to act morally. At the other extreme for Kant is the rule of law embodied in the perpetual peace, a law that is based on legitimacy rather than coercive power. One change in the norms of the international system that could be expected based on Kant's argument is that anarchy should become less important over time. Supranational actors, such as international organizations, might become more powerful and legitimate as a result of this process. As states extend their domestic rule of law to an international rule of law, they have more incentives to respect the principles embodied in the federation of free states. A good example of this argument is provided by Russett (1993), where he contends that democracies are more likely to uphold international agreements because of public costs for breaking commitments (stemming from the domestic rule of law).

If the role of anarchy does become less pronounced in the system, the norm of adjudicating disputes through international organizations might become more prevalent over time. International courts might be utilized more frequently to resolve international disputes. For example, many militarized disputes between democracies in the post-World War II period involve disputes over fisheries stocks and maritime resources/boundaries. Iceland and Great Britain fought four militarized disputes in this time period over Iceland's claim to a 12-mile maritime boundary; Great Britain recognized only a 6-mile boundary. International organizations such as the European Union and the United Nations have played a prominent role in recent years in resolving these types of disputes between nations. The maritime boundary dispute between Great Britain and Iceland was brought

before the International Court of Justice. Future historical and empirical research will help determine the extent to which democratic norms such as these have become system-wide norms.

Economic Relations, Democracy, and War

In Chapter 2, I also examined the relationships between two important economic variables and democracy and war: systemic trade and world production. I tested Mansfield's (1994) theoretical argument that systemic trade is negatively related to war in the international system because trade increases dependence and provides a less costly means than war for gaining access to valuable markets and resources. Trade also serves to promote the spread of democratic norms or the international rule of law because the hegemonic state trades with a large number of nations. One consequence of such global trade is that the hegemon's domestic cultural values and norms are often transmitted to other states. As a result, we would expect to find a negative relationship between trade and war at the systemic level. The empirical models estimated in Chapter 4 provide some support for this relationship, with the first lag of systemic trade (as measured by British exports) being negatively and statistically significant in both models. I found, however, alternating signs on the various lags of systemic trade in Model One and Model Two indicating that the relationship between trade and war may be more complex than it is currently modeled (i.e., not linear). One alternative specification would be to draw from the research on long cycle theory (e.g., Goldstein, 1988), which predicts a cyclical relationship between multiple economic variables and war. More generally, we need to

think explicitly about how economic interdependence, especially in the form of trade, operates at the systemic level.

The other key economic variable analyzed in this study is world production and its impact on global democracy. Drawing from the literature on democracy in comparative politics, I hypothesize that the higher the level of world production, the greater the growth in the proportion of democracies in the system (P_8). I found very weak empirical support for this proposition only in Model One (with Doyle's measure of democracy). The relationship between economic growth or production and democracy might be more important at lower levels of analysis. It would be interesting to compare, for example, the importance of war versus economic development on the process of democratization in individual states, taking into account regional and geographic factors (Maoz, 1997).

Systemic Power Concentration and War

The final relationship examined in this study was between systemic power concentration and war. In Chapter 2, I summarized the two competing theoretical arguments on concentration and war at the systemic level: balance of power and power preponderance theories. According to power preponderance theory, increasing concentration of power among major powers in the system will make systemic war less likely because high levels of concentration decrease the level of uncertainty associated with the relative position of nations and changes in that distribution over time. I tested this proposition (P_6) and found strong empirical support in both models in Chapter 4. The third and fourth lags of the change in major power capability concentration are negatively and significantly related to the proportion of system members fighting interstate wars.

I analyzed the changes in this relationship in Chapter 5 through sliding window analysis. One prominent study of concentration and war at the systemic level (Singer, Bremer, and Stuckey, 1972) finds an inter-century (19^{th}, 20^{th}) difference in the concentration-war relationship; higher levels of systemic power concentration are negatively related to war in the 20^{th} century (consistent with power preponderance theory), yet positively related to war in the 19^{th} century (consistent with balance of power theory). My sliding window analysis contradicts this finding, demonstrating that the power preponderance model is the best model for the entire time period (1816-1988), with the strongest negative relationship between concentration and war observed in the first 50 years of the sample. What is nice about the sliding window estimates is that they can show any structural breaks in the relationships between variables of interest without imposing artificial cut-off points such as 1899/1900.

In conclusion, the growth in the number of democracies in the world and the overwhelming peace between democracies offers an optimistic view of the future of international relations. The theoretical and empirical results contained in this study indicate that the pacific impact of democracy on war at the systemic level is getting stronger over time, and that the international system is moving ever closer to Kant's vision of a perpetual peace. It is quite likely that the very nature of the international system will be transformed in the future as more states become democratic and as the cooperative and peaceful norms that characterize democratic interactions become more pronounced in the international system as a whole. The extent to which liberalism prevails in the future of international relations remains to be seen.

APPENDIX A

APPENDIX A

As I noted in Chapter 2, an important feature of Kant's theoretical model is that democracy and war are endogenously related to each other over time. This appendix describes the technical problems associated with endogeneity if it is not modeled properly.

If endogeneity is present, the relationship posited in a single equation analysis is biased; the explanatory variable (proportion of democracies in the system) will be correlated with the residuals and the estimates will be biased. If parameters are biased, we have no way of knowing in what direction. In other words, the effects of democracy on systemic war could be greater or smaller than we think. King, Keohane, and Verba (1994:188) elaborate this point:

> If we have endogeneity bias, we are estimating the correct inference plus a bias factor. Endogeneity is a problem because we are generally unaware of the size or direction of the bias. This bias factor will be large or small, negative or positive, depending on the specific empirical example.

If two variables are endogenously related and the relationship is modeled in only one direction, the estimator is not consistent, i.e., the parameter estimates are not near their true values in large samples. Suppose, for example, that one endogenous variable Y, is regressed on one explanatory variable, X.

$$Y = \beta X + \varepsilon$$

Now suppose that X also depends on Y, i.e., X and Y are endogenously related to each other:

$$E(X) = \gamma Y$$

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If we estimate the first equation with OLS assuming $\gamma=0$, then it can be shown that OLS is not consistent, in other words, the probability limit of $(b - \beta)$ does not converge to zero as the sample size goes to infinity because the covariance between X and ε does not equal zero. More formally:

$$\frac{\text{plim}\left[\frac{\Sigma(X_i\varepsilon)}{N}\right]}{\text{plim}\left[\frac{\Sigma(X_i)^2}{N}\right]} \neq 0$$

This introduces a systematic bias in the estimates of β where $E(b) = \beta + \text{bias}$.

The most important implication of endogeneity for the democratic peace is that we have no way of knowing how robust previous findings at the systemic level are, because they are based on underspecified models. If in fact, the true theoretical relationship between democracy and war at the systemic level is endogenous as I have argued, then any models that fail to account for this relationship will be biased. In addition, endogeneity can have a serious impact on the size of the coefficients, which affects both the substantive and statistical significance of the parameters.

APPENDIX B

APPENDIX B

In this Appendix, I present the preliminary empirical results obtained with Kalman Filter estimation of Model Two. The Kalman Filter was developed in the engineering literature (Kalman, 1960) to estimate state space models consisting of two key parts: 1) the transition equation, which describes the evolution of a set of state variables, and 2) the measurement equation, which describes how data is generated from the state variables. More formally, the state space model can be written as:

$$y_t = Z_t \alpha_t + \varepsilon_t$$

$$\alpha_t = T \alpha_{t-1} + \eta_t$$

$$\varepsilon_t \sim N(0,\sigma^2)$$

$$\eta_t \sim N(0,\sigma^2 Q_t)$$

$$\alpha_0 \sim N(a_0, \sigma^2 P_0)$$

where there are m independent variables Z_t and y is the dependent variable. The second equation is the transition equation that describes the evolution of the parameters. The parameters α_0 and P_0 in the last equation represent the mean and variance of the initial state vector. Once a model is placed in state space form, it can be estimated via the Kalman filter, which is "a recursive procedure for computing the optimal estimator of the state vector at time *t*, based on the information available at time *t*. This information consists of the observations up to and including y_t. (Harvey, 1989:104)." The Kalman filter is a powerful tool for estimation primarily because any of the parameters described above can be allowed

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to vary over time (including the parameters and the variance of the parameters). It is well suited to the analysis of time varying parameter models, making it useful in the present context.

Recall that the sliding window technique provides overlapping "snapshots" of the parameters across time. The Kalman filter, on the other hand, updates the parameters in a Bayesian fashion, utilizing all information from the past. I estimated the final reduced form of Model Two with the Kalman filter, using OLS estimates of the individual equations in the first 20 years of the sample as initial starting values. The remainder of the sample was then estimated with the filter, and the procedure generated evolving state vectors for each parameter in the model for every year in the sample.

The Kalman filter estimates of the impact of the proportion of democracies ($\Delta Politydem_{t-1}$) on the level of war in the system (Propwar) are plotted in Figure 34. Each point in the figure represents the parameter value for that year, which is updated across the entire series with increasing amounts of information. The general trend in the parameter is what I predicted theoretically (P_3), i.e., the pacific impact of democracy on war is getting stronger over time. The sign, however, is strongly positive in the early years of the sample, and becomes negative only during World War II. This could be attributed to the very high and positive initial starting value in the 1840's. The overall trend in the Kalman filter estimates, however, supports the results obtained in the sliding window estimation. The

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negative impact of democracy on war in the system has grown stronger over time, as the international "rule of law" promoted by republican governments has expanded.

Figure 35 contains the Kalman filter estimates of the impact of war ($Propwar_{t-1}$) on democracy (ΔPolitydem). The results in this graph generally confirm the results obtained in the sliding window estimation. The relationship is positive across the majority of the sample years, i.e., as the proportion of system members fighting interstate wars in the international system increases, the proportion of democracies in the system increases (supporting P_4). Also, the impact of war on democracy increases in the 19th century, drops off in the early 20th century, and then increases again following World War II. While I expected a declining impact of war on democracy (P_5), the results of the Kalman filter suggest that the relationship is positive, and fairly stable over time, a result obtained in the sliding window estimation as well.

Figures 36 and 37 present the Kalman filter estimates of the relationship between capability concentration ($\Delta Concen_{t-3}$, $\Delta Concen_{t-4}$) and systemic war (Propwar). In the sliding window estimation, I found a strong, negative relationship between concentration and war in the earliest and most recent subsamples. The Kalman filter estimates show a positive relationship between the third lag of concentration and war in the 20th century, whereas the relationship between the fourth lag of concentration and war is negative from 1860 to the present. These results support the general conclusion drawn from the sliding window estimation, namely that there is more support for the power preponderance

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hypothesis, i.e., that the greater the concentration of capabilities between major powers, the less likely war is in the international system.

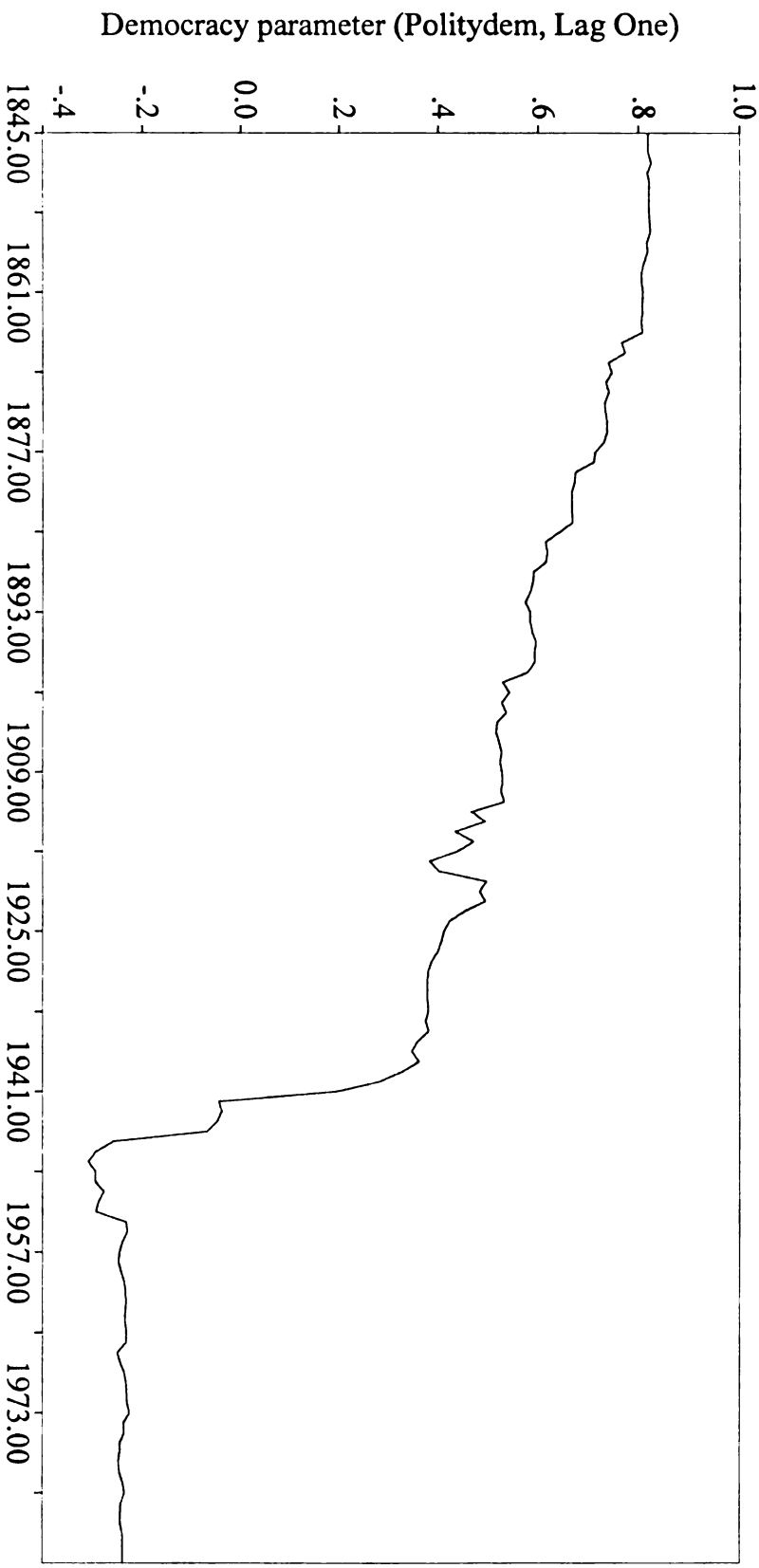

Figure 36 - Kalman Filter Estimates of the Impact of Democracy on War

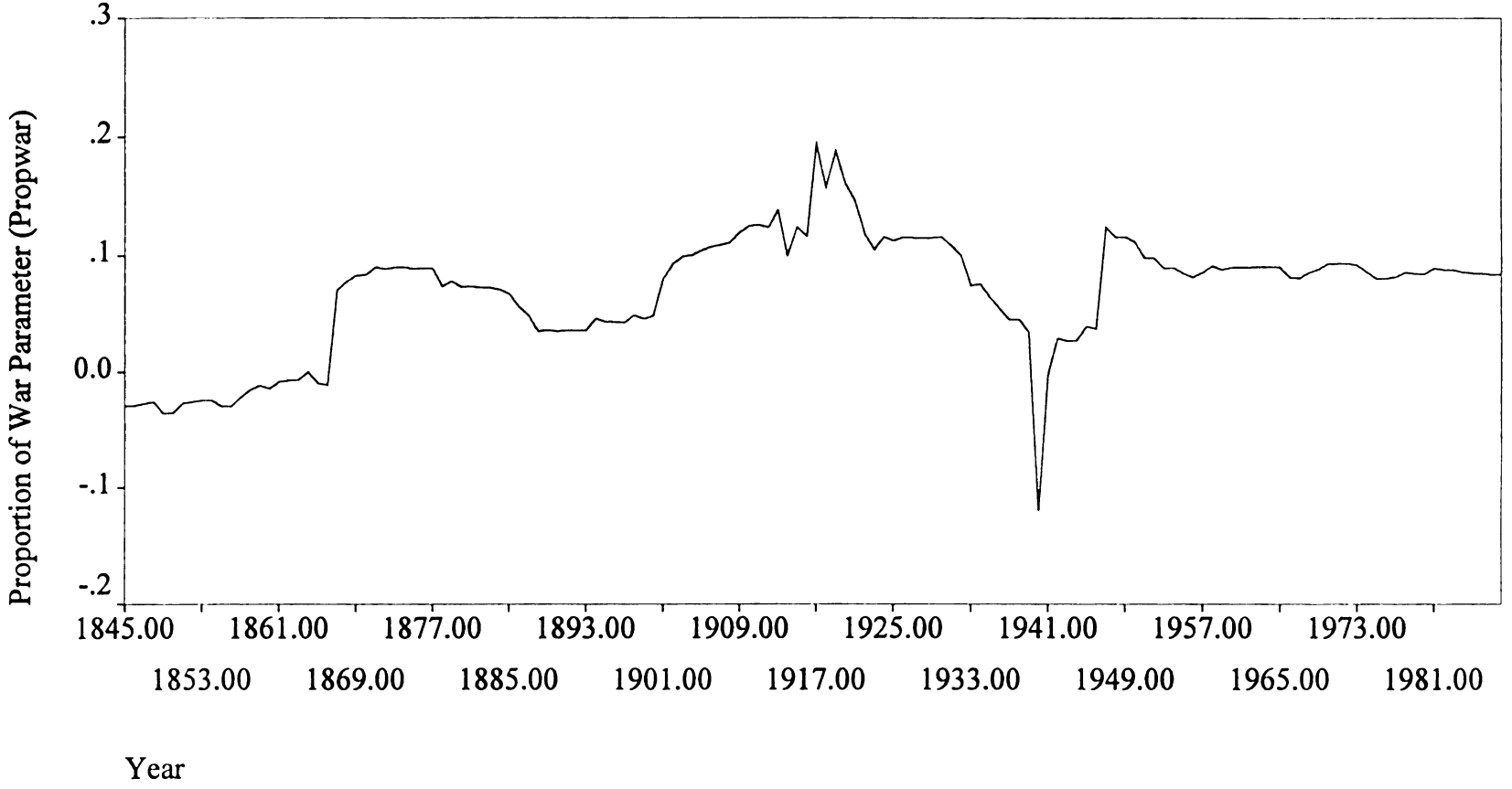

Figure 37 - Kalman Filter Estimates of the Impact of War on Democracy, Lag One

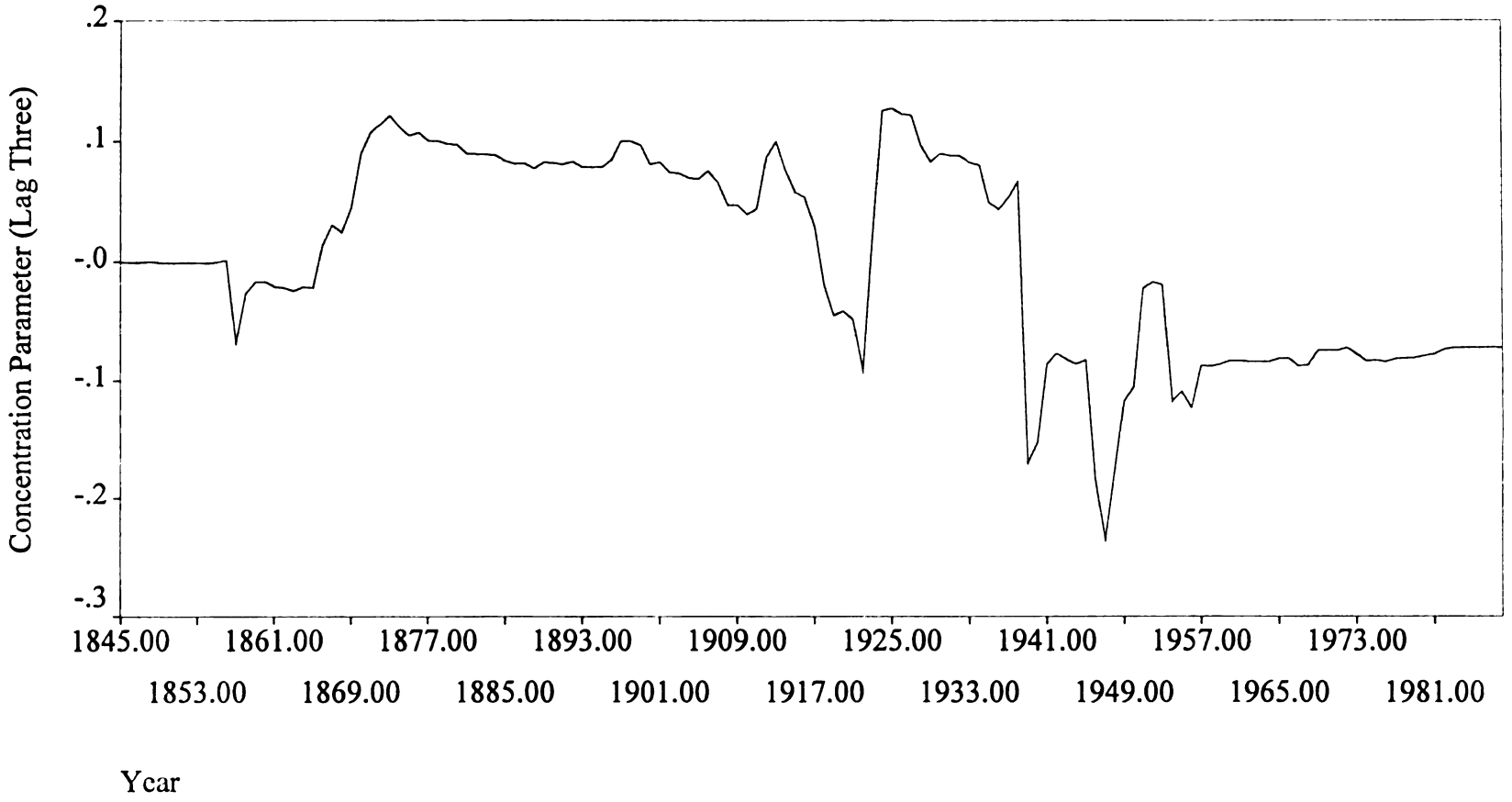

Figure 38 - Kalman Filter Estimates of the Impact of Concentration on War, Lag Three

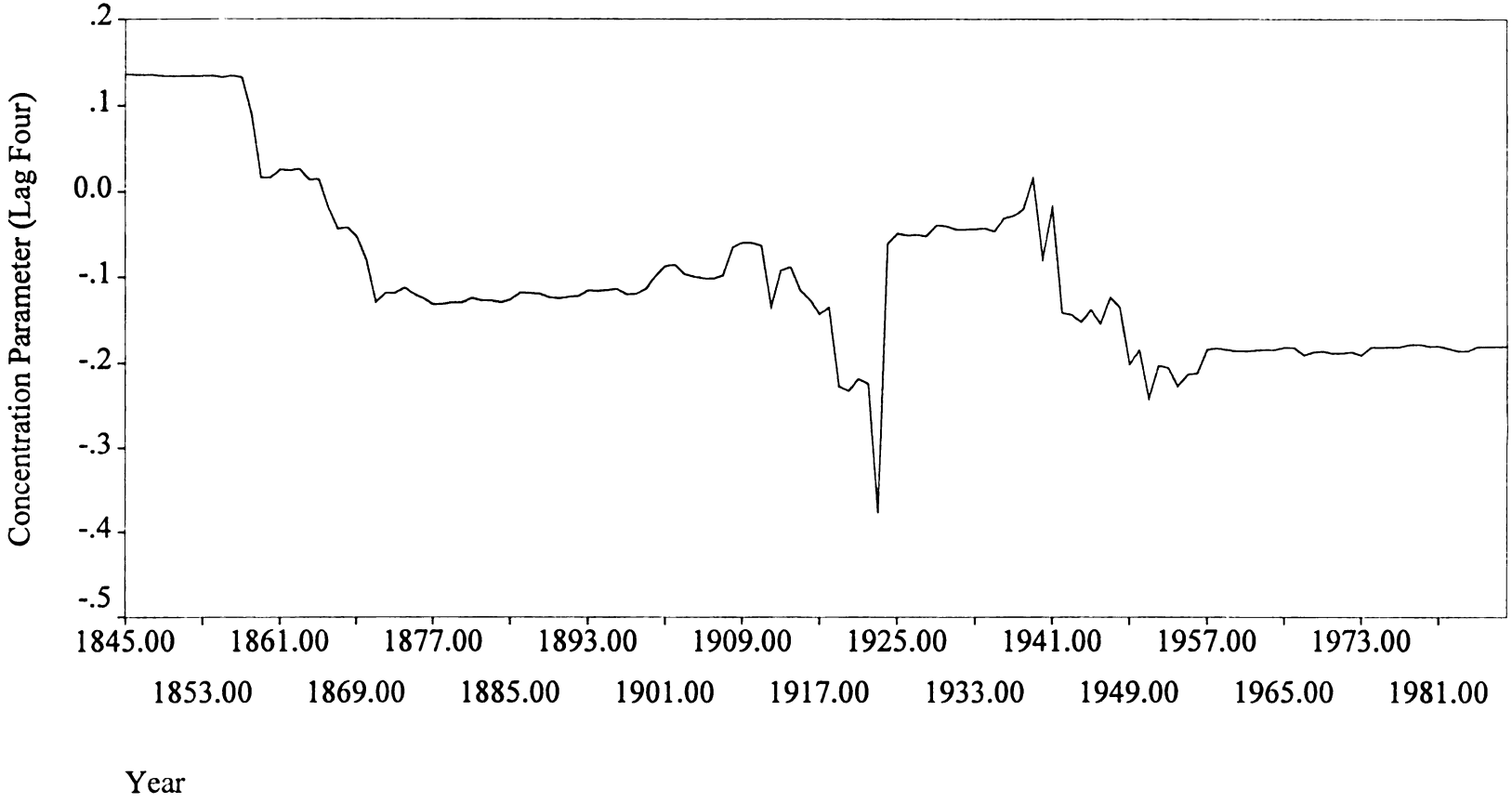

Figure 39 - Kalman Filter Estimates of the Impact of Concentration on War, Lag Four

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