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INTELLIGENT DISCONTENT, AGITATION, AND PROGRESS: A TIME-SERIES  
ANALYSIS OF NATIONAL REVOLTS IN CENTRAL AMERICA 1960-1982

THESIS

Presented to the Graduate Council of the  
University of North Texas in Partial  
Fulfillment of the Requirements

For the Degree of

MASTER OF ARTS

By

J. Sky David, B.S.

Denton, Texas

August, 1997

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Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua have all experienced significant social, economic, and political changes during the 1960s, 1970s, and 1980s. Guatemala, El Salvador, and Nicaragua experienced violent national revolts, while Costa Rica and Honduras did not.

I tested a process theory that endeavored to account for the origins and intensity of national revolts in Central America. The analysis was formulated in a most-similar-systems (MSS) design. Pooled cross-sectional time-series regression techniques were employed in order to conform with the MSS variation-finding strategy. The findings supported the conclusion that armed attacks against the state were not random occurrences, but rather, that they may have arisen in response to certain economic and political conditions.

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## CHAPTER I

### INTRODUCTION

The preceding four decades have been marked by astonishing change in Central America. Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua have all experienced significant social, economic, and political changes, in varying degrees, during the 1960s, 1970s, and 1980s. However, the rate and nature of the changes in these countries has not been uniform.

On the surface, these countries share many similarities. They are located within a single region that is bounded by the Pacific Ocean and the Caribbean Sea. All of these countries have access to the Pacific Ocean, while all but one (El Salvador) have access to both the Pacific and the Caribbean. Spanish is their common language, and all have shared common historical experiences, such as being part of the same colony and sharing membership in a common political entity known as the United Provinces of Central America (Booth and Walker 1993:17).

However, a closer inspection of Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua would reveal significant differences. Each nation has had its share of political violence, yet, the intensity and duration of these episodes has differed among them (Brockett 1988, Williams 1986, LaFeber 1983, Taylor and Jodice 1985, Booth and Walker 1993). Guatemala, El



Salvador, and Nicaragua experienced violent national rebellions in the 1960s, 1970s, and 1980s, while Costa Rica and Honduras did not (Brockett 1988, Booth 1991, Booth and Walker 1993, Bulmer-Thomas 1987:227, Williams 1986).

In Nicaragua in 1979, a revolutionary movement triumphed after a nearly one year civil war between the Somoza regime and a coalition led by a Marxist revolutionary movement, the *Frente Sandinista de Liberacion Nacional (FSLN)* (Singer and Small 1994, Booth 1991, Booth and Walker 1993, DeFronzo 1991, Shugart 1989, Grynspan 1991). From October of 1966 to July of 1972, and again from March 1978 to April 1984, Guatemala was wracked by civil warfare between a series of repressive military regimes and numerous Marxist revolutionary groups (Singer and Small 1994, Booth 1991, Booth and Walker 1993:183, LeoGrande 1990:149-151, Anderson 1988). From July 1979 well into the early 1990s, El Salvador was the site of a protracted civil war between various groups of Marxist rebels<sup>1</sup> (Singer and Small 1994, LeoGrande 1990:147-149, Montgomery 1984, LaFeber 1983:242-256, Anderson 1988, Booth and Walker 1993).

On the other hand, Costa Rica and Honduras have remained *relatively* calm (Booth 1991). Honduras, the poorest of the five Central American nations, also had a handful of Marxist rebels against the regime (Anderson 1988:1-69),

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<sup>1</sup> The FMLN in 1980 was composed of a coalition of previously independent Marxist rebel groups. Soon after, the FMLN forged an alliance with the Frente Democratico Revolucionario (FDR) (Booth and Walker 1993: 183, LeoGrande 1990: 147-149).

but their challenges to the state's sovereignty were nowhere near the scope and intensity of the civil wars in Guatemala, El Salvador, and Nicaragua<sup>2</sup> (Foltz 1990:64). Scholars have argued that the factional nature of Honduran politics, as is illustrated by the "126 changes of government, 16 constitutions and 385 coups since gaining independence" and the hegemonic influence of the United States have considerably lessened the chances of a full-scale national revolt (Foltz 1990, Booth and Walker 1993).

Costa Rica, the richest of the five nations, has been the most serene. Unlike the other Central American nations, the Costa Rican regime has been characterized as very mildly repressive (Booth 1991, Williams 1986:166-189, Booth and Walker 1993). Costa Rica has not had a standing army since 1949, and its regimes have been generally considered progressive and responsive, thus taking away much of the appeal of Marxist revolutionary ideology (Booth 1991, Williams 1986:166-189, Booth and Walker 1993). Costa Rica also has the distinction of having the oldest national constitution in Central America (1949) (Jackman 1993:163).

These brief appraisals illustrate that despite many seeming similarities, pronounced differences exist among the nations of Central America. The

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<sup>2</sup> Although death squads started to appear on the Honduran national scene in 1983 as an effective counterinsurgency tool of the regime (Booth and Walker 1993: 50-51).

differing levels of revolutionary activity are the impetus for this analysis. I will test a theory that endeavors to account for the origins and intensity of national revolts in Central America.

## CHAPTER II

### LITERATURE REVIEW

#### Terminology

Scholars have utilized various terms to denote large-scale political violence. The critical point that must be addressed is the distinction between a revolution and a national revolt (rebellion)<sup>3</sup>. "A revolution is a rapid, fundamental, and violent domestic change in the dominant values and myths of a society, in its political institutions, social structure, leadership, and government activity and politics" (Huntington 1968:264, Sederberg 1994)<sup>4</sup>. This definition of revolution implies finality; the regime of a sovereign state has been radically and fundamentally changed as the result of the conflict over sovereignty. Another characteristic of this definition is that it is limited conceptually, and only pertains to a small number of cases (Walton 1984).

John Walton offered a "conceptually broader" term used to describe large-scale political violence systematically directed against the regime in power (1984, Booth and Walker 1993:56). Walton conceptualized a national revolt as,

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<sup>3</sup> The terms national revolt and rebellion will be used interchangeably throughout the remainder of this thesis.

<sup>4</sup> Sederberg (1994) provides an excellent list of contending definitions of revolution.

a process involving violent conflict between mobilized class and status groups and the state, of an extended duration, on a national (or at least non-local) scale, and based on cultural, social, political, and economic issues whose mediation transforms the state and society. National revolt designates a broad class of events and processes that vary from sustained insurrection to revolution as it is customarily understood (1984:6).

In this respect, national revolts may be thought of as engines of change without the implication of a conclusive victory by a state challenger in a protracted contestation over sovereignty. This rich conceptualization allows one to enlarge the number of cases that are viable for analysis, while still preserving the uniqueness and importance of the phenomenon.

### General Theories

Ted Robert Gurr is the leading contemporary scholar in the psychological genre of revolutionary theory. Gurr's theory of revolution is predicated on the assumption that all forms of civil strife are the result of a psychological variable called "relative deprivation" (RD)<sup>1</sup> (1968, 1970, 1971). Gurr argued that "[s]ome degree [of RD] is present in any population at all times" (Moshiri 1991:21). Gurr asserted that "the more widespread and intense the deprivation is among members of a population, the greater is the magnitude of strife in one or another form" (1971:294). Gurr offered four intervening variables, or filters, that were

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<sup>1</sup> Sederberg provides a compact summary on the writings of Gurr (1994:117-127).

supposed to moderate the effects of RD, and thereby determine the “magnitude of civil strife” (1971:294)<sup>2</sup>.

Edward N. Muller and Karl-Dieter Opp demonstrated the dynamics of the rational actor approach to studying rebellious collective action (1986). Muller and Opp sought to “review the motivational assumptions of a rational choice explanation of rebellious collective action, [to] propose a public goods alternative to the conventional private interest model, and [to] conduct empirical tests of the public goods argument versus the private interest argument by means of survey research” (1986:472).

Theda Skocpol argued that there are certain characteristics of social structure that increase the likelihood of revolution (1979). Skocpol’s conceptualization of a social revolution is as follows:

Social revolutions are rapid, basic transformations of a society’s state and class structures; and they are accompanied and in part carried through by class-based revolts from below. Social revolutions are set apart from other sorts of conflicts and transformative processes above all by the combination of two coincidences: the coincidence of societal structural change with class upheaval; and the coincidence of political with social transformation (1979:4).

For Skocpol, all of the preceding complex requirements must be satisfied in order for an incidence of large-scale violence to be classified as a social

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<sup>2</sup> The intervening variables were: coercive potential, institutionalization, factionalization, and legitimacy (Gurr 1971:294). Again, Sederberg provides an excellent summarization of the interplay between the filters, values of a populace, and the magnitude of political violence (1994:117-121).

revolution (1979:4-5). This rigid, time-bound, and success-oriented conceptualization limits its applicability to a “relatively few historical instances” (Skocpol 1979:5).

Charles Tilly has been credited with integrating the concept of “resource mobilization” into the study of revolution (Moshiri 1991:24-26). Tilly has also been credited with bridging the gap between structural and psychological theories of revolution by exploring and integrating the dynamics of group mobilization into the study of revolution (Moshiri 1991:24). Tilly offered two separate models whose combination allegedly accounts for revolutionary activity (Moshiri 1991:24-25). The first model, the polity model, explored the relationships among groups that lead to conflict in a society (Moshiri 1991:24). The salient groups within the polity model were: the government, contenders, the polity, and coalitions (Moshiri 1991:24, Tilly 1978:52). “What is important about the polity model is that it is the conflict between and among groups that is the key to understanding revolutions” (Moshiri 1991:24).

The mobilization model was offered to explain the actions of individual contenders in the society (Moshiri 1991:24). The components of the mobilization model were: “interests, organization, mobilization, power, repression, and opportunity” (Moshiri 1991:24, Tilly 1978:54-69). “In essence, a highly mobilized group is able to demand vast resources from its members and have them delivered” (Moshiri 1991:24).

Jack A. Goldstone (1986, 1991) skillfully synthesized the structural theories of revolution previously offered by Tilly (1978) and Skocpol (1979) (Moshiri 1991). Goldstone identified three factors that he believed were responsible for the origins of revolution: state crisis, elite alienation and mass mobilization (Moshiri 1991:31, Goldstone 1986:3, 1991). Goldstone asserted that these three factors had to work in "conjunction" in order to affect revolutionary change (Goldstone 1991:37). Goldstone then provided an "engine", or set of conjunctive catalysts, for his theory on the origin of revolution (1991).

The catalysts of conjunction were: price inflation, population growth, and the international political/economic environment (Goldstone 1991:40). Goldstone stated that price inflation and population growth were inseparably related to the onset of revolution (1991:40). Thus, Goldstone's necessary forces for revolutionary conjuncture acted as antecedent variables, or preconditions, for the factors, that if properly conjoined, caused revolution (1986, 1991).

#### Theories of National Revolts and Revolution in a Central American Context

Walter LaFeber offered a decidedly internationalist neodependency theory to explain the onset of Central American national revolts in the 1970s and 1980s (1983). LaFeber placed blame on United States foreign policy for these rebellions (1983:12-18). LaFeber argued that U.S. foreign policy since 1790 has "been staunchly antirevolutionary" and that "US power has been the dominant



outside (and often inside) force shaping the societies against which Central Americans have rebelled" (1983:12).

These two notions translate into the US enactment of protectionist policies toward the region, and the forceful advocacy/implementation of capitalism (LaFeber 1983:12-18).

The need of ... Central Americans to find different means for achieving their version of a just society arose in large part from their long experience with North American capitalism. This capitalism has had a Jekyll and Hyde personality. U.S. citizens see it as having given them the highest standard of living in the world. Many Central Americans have increasingly associated capitalism with a brutal oligarchy-military complex that has been supported by U.S. policies - and armies. Capitalism, as they see it, has too often threatened the survival of many for the sake of the few (LaFeber 1983:14).

LaFeber argued that the U.S. has used its economic strength to force the national economies of Central America to concentrate on export agriculture (1983:17). LaFeber contended that the economies of Central America were not able to fully develop because of their emphasis on the exportation of primary products (e.g. coffee) whose prices and subsequent income were too susceptible to fluctuations in the international market place (1983:17).

Finally, LaFeber theorized that the likelihood of national revolts was mediated by two factors, and that these factors helped explain the different outcomes experienced by the nations in the region. The first factor was the emergence of Christian base communities (CBC) and "liberation theology",

which advocates the poor becoming catalysts for their own freedom (LaFeber 1983:220). The second factor was the willingness of the regime to undertake political and social reforms such as minimum wage laws, the right of collective bargaining, educational and social services, and encompassing welfare systems (LaFeber 1983:263-267).

Robert G. Williams offered a process theory to explain national revolts in Central America (1986). The key components were export agriculture, the international economic climate, elite dynamics, and governmental repression (state terror) (Williams 1986). Williams theorized that the reliance of the region on a few key agricultural products left the Central American nations vulnerable to shocks in the world market (e.g., oil price fluctuations and the world recession in the late 1970s and early 1980s) (1986:162). The interplay between elite demands for land, labor laws to preserve their economic standing, and the state's ability to curb, or moderate, these demands also influenced the likelihood of national revolts (Williams 1986:161-163). Finally, the state's willingness to use repression, as a tool to silence demands for reform, increased the likelihood of national revolts in the region (Williams 1986:188-189).

In Nicaragua, El Salvador, and Guatemala, national governments attempted to contain the pressures from below by terrorizing the poor. Demonstrations for higher wages were fired upon, land occupations were brutally crushed, and leaders of grassroots organizations were made to disappear. In contrast, ... the governments of Honduras and Costa Rica did not side with elites in a single-minded way, but made some concessions to the poor in land and wage disputes (Williams 1986:189).

Timothy P. Wickham-Crowley (1992) presented a variant of the classical structural theory of revolution. Like Skocpol (1979), Wickham-Crowley contended that social revolutions were rare and complex phenomena (1992). Wickham-Crowley's theory consisted of three principle facets: peasant support for guerilla movements, military resources, and a set of "specific sociopolitical conditions" (1992:8-9). He contended that peasant support was "a crucial contributor to revolution, and no revolutionary guerilla movement - in the Latin American context - is likely to seize power without such support" (1992:8). Strong peasant support for the guerilla movement was seen to augment, in part, the military capability of the guerilla movement (1992:8).

Wickham-Crowley argued that guerilla movements must have "enough military power to endure and outlast military repression, and finally to confront the military, or they will be militarily unable to achieve the revolutionary transfer of power" (1992:8). In essence, the guerilla movement must have an ample supply of resources (e.g., personnel, arms, money), and an unwavering commitment to engage the armed forces for a protracted period of time.

Wickham-Crowley contended that strong peasant support and military might were insufficient, in and of themselves, to affect a revolution (1992). Wickham-Crowley enumerated a series of sociopolitical conditions that were theorized to create a "nurturing" environment for a revolution (1992:8-9).

Only under specific sociopolitical conditions will such a revolution ensue: when a certain weak type of political regime, confronted with a guerilla challenge, engenders in the society a cross-class opposition, leading to the appearance of dual power in the political order, and finally a revolutionary over-throw of the old regime. The crucial theoretical linkage here is between a peculiarly weak 'old regime' and its tendency to press the elements of the opposition toward an alliance, rather than to aggravate their internal divisions and conflicts (Wickham-Crowley 1992:9).

Wickham-Crowley theorized that all of the preceding three components must "converge" in order for a social revolution to occur (1992:9).

Peter H. Smith theorized that the region's dual reliance on the United States as a major trading partner, and its reliance on import-substitution-industrialization (ISI), fueled by the agro-export industry, left it in a vulnerable position (1986:8-9). "The agro-export system discouraged industrialization: the population was small and income distribution so severely skewed that the vast majority was too poor to provide the purchasing power necessary for an adequate market" (Smith 1986:9).

Smith also emphasized the role of the Central American Common Market (CACM)<sup>3</sup> in eventually contributing to the region's instability (1986:9). "The CACM seemed to promise a way to expand market size without facing the politically difficult task of internal, redistributive reforms - [for instance] land and taxes - that were strongly opposed by traditional elites" (Smith 1986:9).

According to Smith, the U.S.'s well-intentioned, but painfully short-sighted,

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<sup>3</sup> The CACM was founded by Nicaragua, Guatemala, El Salvador and Honduras in 1960. Costa Rica later joined in 1962 (Smith 1986:9).

economic programs<sup>4</sup> had disastrous consequences (1986:9-12). Finally, Smith theorized that the unwillingness of the traditional elites to enact land reforms to redress land inequalities, and the willingness of “recalcitrant elites” to repress the populace “ignited the flames of insurgency and revolution” (1986:12-14).

Charles D. Brockett’s theory of the origins of large-scale political conflict embodied four components: “the impact of the major agrarian transformations, the sources of peasant mobilization, the responses by the region’s governments, and the role of the United States” (1988:189). Brockett argued that the “ghosts” of the region’s colonial past, i.e., intense social stratification and domination by elite oligarchies, predestined the region’s impending instability (1988:190).

Domestic markets were never allowed to develop because resource distribution and social de-stratification would result (Brockett 1988:190). “What elites have conveniently and consistently downplayed is the relationship between internal demand and social stratification” (Brockett 1988:189). To offset the underdevelopment of their domestic markets, elites concentrated on their markets abroad by concentrating their resources on the agro-export development model (Brockett 1988:190). This reliance on exports, and its inherent instability, resulted in increasing foreign debt burdens (Brockett 1988:191).

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<sup>4</sup> Smith argued that the U.S. Agency for International Development (AID) augmented the power and organization of the military and police forces; the traditional allies of the elites. The Alliance for Progress failed to equally emphasize its stated goals, i.e., political reform and structural development; the former suffered despite the latter (Smith 1986:10-11).

Brockett theorized that peasant mobilization increased as the dislocations caused by the agrarian transformation became more pronounced (1988:191). This dislocation eroded peasants' value systems, social relations, and economic standing (1988:192). Brockett contended that religious groups and Christian base communities energized and helped maintain peasant mobilization.

The differing government responses to demands for reform were paramount in affecting the likelihood of revolutionary activity within the region (Brockett 1988:193). Revolutionary activity increased when demands for reform were met with widespread and systematic tortures and political killings<sup>5</sup> (1988:193-197). On the other hand, regimes<sup>6</sup> characterized as permissive or mildly repressive, and given to open dialogue to ameliorate grievances, enjoyed generally low levels of revolutionary activity (Brockett 1988:193-197).

Finally, Brockett theorized that the domestic political climate in Central America was shaped by the reactionary policies of the U.S. (1988:97). "U.S. policy toward agrarian reform in Central America in the postwar period has been the result of policy makers' perceptions of three factors, listed in order of increasing importance: the nature of the reform itself, the effect of the reform on the economic interests of US corporations, and the relationship of the reform to US security concerns" (Brockett 1988:197). It was these perceptions, rather

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<sup>5</sup> This is best demonstrated by the policies of the Guatemalan, Salvadoran, and Nicaraguan regimes.

<sup>6</sup> Costa Rica has consistently and traditionally been the least repressive country in the region, followed by Honduras.

than the realities, that motivated U.S. interference in the domestic political affairs of Central American nations.

John A. Booth proposed a process theory to explain the socioeconomic and political roots of national revolts in Central America (1991). This theory focuses on three elements: class relations, organization and resource mobilization, and the response of the state to mass mobilization (Booth 1991:36, Booth and Walker 1993:58).

Booth theorized that the economic roots of national revolts were nurtured due to the "expansion of speculative export agriculture (from the 1950s through the 1970s) and rapid capital-intensive industrialization (in the 1960s and 1970s)" (Booth 1991:36). These agro-export and capital-intensive industrialization policies resulted in a pronounced decrease in the standard of living for the working class. Specifically, the standard of living was eroded by declining real wages, an increase in unemployment, rampant inflation, and a growing concentration of wealth<sup>7</sup> by the elites (Booth 1991:40-44). In effect, the elites were becoming more wealthy, while the working class suffered because of the

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<sup>7</sup> Booth also pointed out that natural disasters experienced by two of the countries (Nicaragua, Guatemala) made these cleavages even more pronounced (1991:48). Bulmer-Thomas went further and argued that the earthquake in Managua (1972), Hurricane Fifi in Honduras (1974), and subsequent earthquakes in Guatemala (1976) "had serious fiscal repercussions, because they reduced the yields from many taxes at the same time as damage-related expenditure soared; access to foreign emergency relief funds provided considerable support, but could not offset completely the fiscal implications" (1987:213).

regime's unwillingness to enact social and domestic relief programs designed to lessen the adverse effects associated with rapid economic growth<sup>8</sup>.

Real wages of the working class were unable to keep up with the rampant inflation brought on by the OPEC oil embargo of 1973 (Booth 1991:40-41). Unemployment rose in the region because of rural dislocation and subsequent urban migration of the poor (Booth 1991:41-43). Wealth, in the forms of income and land, became further concentrated in the region due to high levels of return for primary products (Booth 1991:43).

The grievances brought on by the previously mentioned cleavages resulted in an increase in popular mobilization (Booth 1991:48-49, Booth and Walker 1993:58-59). Booth noted a marked increase in agrarian, labor, student, and disaffected elite opposition mobilization in the mid 1970s (Booth and Walker 1993:58, 1991:48-49). "Clergy also organized small groups of the urban and rural poor into Christian base communities" (Booth 1991:49). At this point it is critical to mention that Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua all experienced the above cleavages and resulting mobilization in varying magnitudes. However, it is the third component of the process theory (state response) where the "critical mass" of national revolts is formed.

Booth theorized that the obstinacy and unwillingness of the state "to redress or ameliorate inequities" aggravated an already volatile situation (Booth

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<sup>8</sup> Olson (1963) theorized that rapid economic growth was a destabilizing force. Booth (1991, 1993) theorized that a volatile rate of growth was a prime contributor to the instability of the region.



and Walker 1993:58). Specifically, it was the failure of the state to respond to those issues with favorable agrarian reform and wage policies (Booth and Walker 1993:58).

The Central American states had two choices; they could either repress the masses in order to “discourage” protesting, or they could enact ameliorative policies to redress those grievances, and thus dispel the *raison d’etre* of the protests (Booth and Walker 1993:58). Countries responding with the latter tactic experienced the “repression paradox”.

Subjected to [continued] repression and refusal to reform, the aggrieved developed better organization, formed progressively greater coalitions among regime opponents, mobilized increased economic resources from poor and wealthy regime opponents and from some external sources, forged alliances with and swelled the ranks of armed leftist guerrillas, and violently contested the regime’s sovereignty. The outcome of the contest over sovereignty depended on the relative success of the regime versus the rebels in mobilizing and maintaining domestic and external economic and material support and organization (Booth and Walker 1993:59).

### Theoretical Discussion

There is perhaps only one certainty in the study of national revolts; they are complex phenomena. In this section, my purpose is to distill the major points from the preceding theory<sup>9</sup>, to form logical hypotheses from it, and finally, to subject those hypotheses to empirical testing.

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<sup>9</sup> Booth (1991), Booth and Walker (1993)

To briefly summarize, the rapid economic growth experienced in Central America from the 1960s to the mid 1970s had disastrous effects on large segments of the populace. The region's over-reliance on the exportation of primary products left their respective economies vulnerable when the terms of trade became unfavorable. The working class's standard of living declined due to stunted wages in times of rapid economic growth, and declined further when wages were not adjusted in order to retain their previous purchasing power in the wake of rampant inflation<sup>10</sup>.

The disparities in income, and the disproportionate burdens on the working class (due to declining wages) generated significant grievances in the populace. These grievances were further intensified by the inability to seek meaningful redress in the political arena. As a result, increasing numbers of grass-roots reform movements and fledgling opposition groups were formed in order to voice demands for reform to the regime.

Regimes that mildly repressed protesters, and that made attempts to reform, were marked by relative tranquility (Booth and Walker 1993). On the other hand, intransigent regimes that heavily repressed protestors and opposition movements, and who refused to enact reformist policies, were marked by an upsurge in protest and oppositional activity. Regimes that

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<sup>10</sup> Costa Rica and Honduras enacted policies that enabled wages to recover their previous purchasing power, while Guatemala, El Salvador, and Nicaragua did not enact such policies (Booth and Walker 1993:119). Honduras instituted a policy of land reform, although only 25% of the land redistribution goal was ever realized (Bulmer-Thomas 1987).

“stepped-up” repression to put down these invigorated protests and silence demands for reform were marked by increased opposition coalition formation and an upsurge in the number of armed attacks against the regime by revolutionary guerilla groups.

### Hypotheses

The following hypotheses were derived from the preceding synthesized theory<sup>11</sup>.

H1: The type of regime in a given country is related to the number of armed attacks in that country. Armed attacks will be less likely under civilian regimes and more likely under military regimes.

It is reasonable to believe that military regimes will be more repressive than their civilian counterparts. “Military juntas are based on force, and force is the key to coercion” (Poe and Tate 1994:858). For most military regimes to remain in power, repression of the rights of citizens is a necessity. On the other hand, civilian regimes are less likely to repress the citizenry, as their mandate to rule is popularly derived from the people. Civilian regimes will be more likely to go to the bargaining table when presented with demands for reform, whereas military regimes will be predisposed to respond forcefully to demands for reform.

H2: The number of armed attacks in a country is related to the rate of growth in that country. The quicker the growth, the more likely armed attacks will be.

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<sup>11</sup> Booth (1991), Booth and Walker (1993)

As was mentioned earlier, the adverse effects associated with a volatile rate of growth will be disproportionately felt by certain segments of the population. In the Central American context, the hardest hit segments of the populace were the middle and working classes. The volatile growth in Central America from the 1960s to the 1980s accelerated the agrarian transformation, and consequently increased rural to urban migration.

I theorize that rebel groups will view volatile economic growth as disproportionately benefitting the elites, while simultaneously hurting the working class. I hypothesize that rebels will increase the number of armed attacks against a state which they perceive to be an incompetent manager of the economy.

H3: The worse the terms of trade, the higher will be the number of armed attacks.

In macroeconomic terms, the terms of trade index is a robust indicator/thermometer of the state's economy. I hypothesize armed attacks will be more likely when the terms of trade are unfavorable. Unfavorable terms of trade may signal to these groups that the state has fallen victim to the capriciousness of the world capitalist market.

H4: The competitiveness of political participation is related to the number of armed attacks. Armed attacks will be more likely when political participation is suppressed, and less likely when it is competitive.

I hypothesize that if given the opportunity to compete in the political arena, political malcontents will be more inclined to build coalitions and gather ballots instead of bullets. On the other hand, where opposition activity is suppressed, I hypothesize that guerilla groups will be more likely to engage in armed attacks as avenues for legitimate influence upon the system will be closed.

H5: Real wages are negatively related to the number of armed attacks in a country.

It is reasonable to believe that guerilla groups are aware of the economic condition of the working class. The working class is that segment of the population that rebel groups seek to curry support. An exploited working class is the *sine qua non* of these groups, and it is on behalf of this class that guerillas will take up the struggle. When wages are not judiciously adjusted during times of volatile growth, armed attacks will become more likely.

## CHAPTER III

### METHODOLOGY AND DATA

A cross-sectional time-series analysis was undertaken to test the synthesized theory of Central American rebellions. The period of this analysis was 1960-1982. Although a longer time frame was desired, I believe that the period 1960-1982 is sufficient for this initial testing of the theory. This period allows me to analyze the socio-economic and political conditions leading up to the national revolts in El Salvador and Guatemala, and in one case the conditions immediately preceding the national revolt and subsequent revolution in Nicaragua.

The comparative and statistical methods were employed in this analysis.

The comparative method resembles the statistical method in all respects except one. The crucial difference is that the number of cases it deals with is too small to permit systematic control by means of partial correlations ... There is consequently, no clear dividing line between the statistical and comparative methods; the difference depends entirely on the number of cases (Lijphart 1971:682-693, Smith 1995:2-3).

This analysis was formulated in a most-similar-systems (MSS) design. "MSS designs lend themselves especially well to intraregional comparisons, such as among nations or communities within Latin America, since location within a single region can operate as a 'control' for the effects of a substantial range of potential independent variables" (Smith 1995:4). Indeed, Booth and Richard

argued that the countries serving as the cases in this study were “ideal” for a MSS design because of their similarities in “size, historical experience, economics, general social culture, and geographical environment” (1996:1208).

Two comparative strategies fall under the domain of the MSS design (Gereffi 1995). “*Variation-finding comparisons* strive for theoretical parsimony by focusing on a few key variables that explain particular comparative outcomes ... *Individualizing comparisons* contrast specific instances of a given phenomenon in order to grasp the peculiarities of each case” (Gereffi 1995:39). In this analysis, pooled cross-sectional time-series regression (PCT) techniques were employed in order to conform with the variation-finding strategy.

### Pooled Model

James Stimson argued that a PCT model could be an “extraordinarily robust research design” because of its inherent ability to study “causal dynamics across multiple cases” (1985:916). Notwithstanding the “benefits” of the PCT model, the two main threats to inference in time-series regression analysis (autocorrelation and heteroskedasticity) become more formidable and vexing because of the combination of space *and* time (Stimson 1985, Clarke 1993, Sayrs 1989).

Of the six classical time-series, linear regression model assumptions<sup>1</sup>, Stimson argued that violating the assumptions of a constant variance in the error term, and the nonautoregression of the error term were the most threatening in PCT analysis (1985). A violation of the latter assumption means that a disturbance in one point in time would be serially correlated with other disturbances in the sample (Ostrom 1990:16).

The implication of this result is that in the presence of autocorrelated residuals the estimated regression line fits the data quite well, leaving the small estimated residuals ... Thus, the estimated variances will seriously underestimate the true variances. Furthermore, the estimated variances are extremely important in constructing confidence intervals, testing hypotheses, and computing t-ratios. In the presence of serially correlated errors one is likely to be led to the paradoxical result that even though the estimated coefficients appear quite reliable (small variances) they are in fact extremely unreliable (Ostrom 1990:22).

The second threat to inference, heteroskedasticity, occurs when the assumption of a constant variance in the error term is violated across units (Stimson 1985:919). As Clarke noted, this "across-unit difficulty involves heterogeneity in the expected value of the dependent variable produced by pooling of data from different units" (1993:4). Stimson contended that the threat of heteroskedasticity is amplified in PCT because "it is likely to affect whole sets

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<sup>1</sup> Those six assumptions are: a linear relationship between X and Y, a nonstochastic X, a zero mean in the error term, a constant variance in the error term, nonautoregression of the error term, and the normal distribution of the error term (Ostrom 1990:15-16).



(e.g., all years for one region) and have a considerably greater potential for mischief" (1985:919). There are a variety of PCT models<sup>2</sup> that deal with these threats to inference in different ways<sup>3</sup>. The Least Squares with Dummy Variables (LSDV) technique was employed as the model of choice in this analysis.

The LSDV model controls for "[s]ignificant between unit (or between-time-point, or both) differences [by] introducing dummy variables for the effects and estimating with OLS" (Stimson 1985:921). Accordingly, this technique entails a necessary compromise. Degrees of freedom are lost/traded to minimize the between-unit differences (heteroskedasticity) (Stimson 1985). Although the LSDV model addresses the issue of heteroskedasticity, it does not address the problem of a serially correlated error process (autocorrelation) (Stimson 1985).

Ostrom stated that the inclusion of a lagged endogenous variable on the right-hand side of the regression equation can largely counter the effects of first-order autocorrelation<sup>4</sup> (1990). This technique has two potential drawbacks. First, the inclusion of a lagged endogenous variable entails a loss in degrees of freedom. Second, "a model with lagged values of the dependent

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<sup>2</sup> E.g., Ordinary Least Squares (OLS), Least Squares with Dummy Variables (LSDV), Error Components (GLSE), and Generalized Least Squares - Autoregressive Moving Average (GLS-ARMA) (Stimson 1985).

<sup>3</sup> For greater detail as to the inherent strengths and weaknesses of the different variants of PCT, please see Stimson (1985) and Sayrs (1989).

<sup>4</sup> Special diagnostics for first-autocorrelation in panel data with a lagged endogenous variable are required, and will be discussed later in this analysis.

variable serving as explanatory variables" will artificially inflate the overall fit of the model ( $R^2$ ) (Ostrom 1990:65).

Finally, Nathaniel Beck and Jonathan N. Katz (1994) have developed an alternative estimator of standard errors in panel data<sup>5</sup> that combats the effects of heteroskedasticity. Beck and Katz<sup>6</sup> have demonstrated that this alternative indicator for panel data is extremely accurate (via Monte Carlo analysis) "even in the presence of complicated panel error structures" (1994:634)<sup>7</sup>. Beck and Katz concluded that:

PCSEs [(panel-corrected standard errors)] dominate OLS standard errors; when PCSEs are not necessary, they perform as well as the OLS standard errors, and when OLS standard errors perform poorly, PCSEs still perform well. Since PCSEs are not difficult to compute, they should replace OLS standard errors for TSCS [(time-series cross-sectional)] data" (1994:641).

Given the warnings of Stimson (1985) and Sayrs (1989), it is assumed as a

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<sup>5</sup> Econometricians refer to "pooled" data sets as panel data sets.

<sup>6</sup> This technique is a variation of White's (1980) robust error technique for non-panel time-series data.

<sup>7</sup> A similar technique to the one employed in my analysis was employed by Poe and Tate (1994) in their analysis of repression and human rights abuses. My technique varies somewhat from theirs, in that, I employ the LSDV model in addition to a lagged endogenous variable and Beck and Katz's panel-corrected standard error technique (PCSE, a.k.a. WHITEPAN procedure). Poe and Tate (1994) did not use the LSDV technique in their analyses, as it is inappropriate in a unit-dominant design ( $N > T$ ), whereas my data are time-dominant ( $T > N$ ), and thus appropriate.

working hypothesis that some degree of heteroskedasticity will potentially threaten inference<sup>8</sup>.

### Model Specification and Operationalization

The pooled cross-sectional time-series LSDV model is formally stated as:

$$\begin{aligned} \text{Armed Attacks}_{ij} = & \alpha + \beta_1 \text{Armed Attacks}_{(t-1)j} + \beta_2 \text{Regime Type}_{ij} + \\ & \beta_3 \text{Rate Change GDP}_{ij} + \beta_4 \text{Terms of Trade}_{ij} + \\ & \beta_5 \text{Competitiveness of Political Participation}_{ij} + \\ & \beta_6 \text{Real Working-Class Wage Index}_{ij} + \text{Country}_{ij} + \varepsilon_{ij} \end{aligned}$$

where,

**Armed Attacks (aattack):** Dependent variable. The data were extracted from Charles Lewis Taylor and David Jodice's *World Handbook of Political and Social Indicators III, 1948-1982 Annual Political Events Data* (1985). It is a ratio scale variable operationalized as follows:

An armed attack is an act of violent political conflict carried out by (or on behalf of) an organized group with the object of weakening or destroying the power exercised by another organized group. It is characterized by bloodshed, physical struggle, and the destruction of property. A wide variety of weapons may be used, including guns, explosives (conventional bombs, hand grenades, letter bombs), chemicals, bricks and other primitive hand weapons such as spears, knives or clubs. This category is intended to encompass all organized political violence, although

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<sup>8</sup> A preliminary analysis was undertaken to ascertain the effects of first-order autocorrelation. The *Durbin Watson d* statistic (1.04) indicated that the general OLS model suffered from positive first-order autocorrelation. Subsequent analyses, referenced later, indicated that the suspicion of heteroskedasticity was warranted.

assassinations are coded separately. It excludes all spontaneous violence [(e.g. riots)]. Also excluded are activities of organized crime which are not observed to be directly relevant to political cleavages and issues. The target of an armed attack is typically a regime, a government, or a political leader, but it may also be a religious, ethnic, racial, linguistic, or special interest minority.

$\alpha$ : Constant

Armed Attacks<sub>(t-1)j</sub>: Independent variable. This is employed to control for the effects of first-order autocorrelation.

Regime Type<sub>j</sub>: Independent variable. The data were derived from Ted Robert Gurr's *Polity II (1990)* data set<sup>9</sup>. It is an ordinal scale variable coded according to the following scheme:

- (1) Civilian: Any government controlled by a nonmilitary component of the nation's population.
- (2) Military-Civilian: Outwardly civilian government effectively controlled by a military elite. Civilian holds only those posts (up to and including that of Chief of State) for which their services are deemed necessary for successful conduct of government operations.
- (3) Military: Direct rule by the military, usually (but not necessarily) following a military coup d' etat. The governing structure may vary from utilization of the military chain of command under conditions of martial law to the institution of an ad hoc administration hierarchy with at least an upper echelon staffed by military personnel.

Rate Change GDP<sub>j</sub>: Independent variable. It is the annual rate of change in Gross Domestic Products (GDP). Gross domestic products are the total value of goods and services produced within the domestic borders of a

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<sup>9</sup> This variable was incorporated into the *Polity II* data set. It was originally derived from Arthur S. Banks's *Cross-Polity Time-Series* data set (1986).

nation over a particular time period, usually one year. Data were extracted from the *World Bank World Data set*<sup>10</sup> (1995).

**Terms of Trade<sub>it</sub>:** Independent variable. It is the terms of trade index derived from the *World Bank World Data set* (1995). "The terms of trade index is the relative level of export prices compared with import prices, calculated as the ratio of a country's index of average export price to average import price index."

**Real Working-Class Wage Index<sub>it</sub>:** Independent variable. The data were derived from Booth and Walker (1993: Table 5)<sup>11</sup>. This reflects the "purchasing power of a worker's wages in terms of goods and services, [and is measured] by the ratio of the money wage rate to the consumer price index" (Samuelson and Nordhaus 1989: 981).

**Competitiveness of Political Participation<sub>it</sub>:** Independent variable. The data were extracted from Gurr's *Polity II* data set (1990). "The competitiveness of participation refers to the extent to which alternative preferences for policy and leadership can be pursued in the political arena" (Gurr 1990:18). Competitiveness of political participation was re-coded into a six category scale according to the following scheme:

- (0) Not Applicable: This is used for polities that are coded as Unregulated, or moving to/from that position, in Regulation of Political Participation.
- (1) Competitive Competition: There are relatively stable and enduring political groups which regularly compete for political influence at the national level. Competition among them seldom causes widespread violence or disruption. Very small parties or political groups may be restricted in the "Competitive" pattern.
- (2) Transitional Competition: Any transitional arrangements from Restricted, or Factional patterns to fully Competitive patterns, or vice versa. Transitions to Competitive are not complete until a national election is held on a fully competitive basis.

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<sup>10</sup> See *Gross Domestic Product (avg annual growth, %)*; the absolute value was taken and then rounded to the nearest tenth.

<sup>11</sup> Missing values were estimated in the SPSS program v. 6.1.3.

(3) Factional Competition: Politics with factional or fractional/restricted patterns of competition.

(4) Restricted/Transitional Competition: Some organized, political competition occurs outside government, without serious factionalism; but the regime systematically and sharply limits its form, extent, or both in ways that exclude substantial groups (20% or more of the adult population) from participation. "Restricted Competition" is distinguished from "Factional Competition" by the systematic, persisting nature of the restrictions: larger classes of people, groups, or types of peaceful political competition are continuously excluded from the political process. As an operational rule, the banning of a political party which received more than 10% of the vote in a recent national election is sufficient evidence that competition is "restricted." However, other information is required to determine whether the appropriate coding is Restricted or Factional Competition. This category is also used to characterize transition between Factional and

Suppressed or Restricted Competition. Examples of "restricted" limitations are:

- i. Prohibiting some kinds of political organizations, either by type or group of people involved (e.g., no national parties or no political organizations among blacks.
- ii. Prohibiting some kinds of political action (e.g., Communist parties may organize but are prohibited from competing in elections.
- iii. Systematic harassment of political opposition (leaders killed, jailed, or sent into exile; candidates regularly ruled off of ballots; opposition media -- press, radio stations -- banned, etc.). This is evidence for either "Factional" or "Restricted," depending on its persistence.

(5) Suppressed Competition: No significant oppositional activity is permitted outside the ranks of the regime and the ruling party. Totalitarian party systems, authoritarian dictatorships, and despotic monarchies are typically coded here. However, the mere existence of these structures is not sufficient for a Suppressed coding. The

regime's institutional structure must also be matched by its demonstrated ability to suppress oppositional competition.

- (6) Rebellious/Revolutionary Transition<sup>12</sup>: Period of violent political conflict between the regime and challengers to its sovereignty. Generally associated with a violent national revolt or revolution. Force alone determines who will be allowed to participate. A suspension of national elections may also be a characteristic of this category.

Country<sub>ij</sub>: Dummy variables for countries. These are included to control for unit effects.

$\varepsilon_{ij}$ : error term

### Results of Statistical Analyses

The first step in the analysis was to perform collinearity diagnostics on the independent variables. In order to assess multicollinearity, I performed a Klein test (Lewis-Beck 1980:60). Table 1<sup>13</sup> displays the results of the Klein test multicollinearity diagnostics.

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<sup>12</sup> Gurr originally coded this as a period of transition. El Salvador was coded as 6 from 1979-1982 (in this analysis) because of the protracted and bloody civil war that characterized this time period. Likewise, Nicaragua was coded as 6 from 1979-1980 because of the Sandinista revolution.

<sup>13</sup> Calculated using the *RATS* program v. 4.10.

**Table 1: Klein Test Diagnostics for Multicollinearity**

<i>Equation</i>	<i>Centered R<sup>2</sup></i>
competitiveness of political participation <sub>ij</sub> = $\alpha + \beta_1$ terms of trade index <sub>ij</sub> + $\beta_2$ regime type <sub>ij</sub> + $\beta_3$ real working-class wage index <sub>ij</sub> + $\beta_4$ rate change gdp <sub>ij</sub>	.24
rate change gdp <sub>ij</sub> = $\alpha + \beta_1$ terms of trade index <sub>ij</sub> + $\beta_2$ regime type <sub>ij</sub> + $\beta_3$ real working-class wage index <sub>ij</sub> + $\beta_4$ competitiveness of political participation <sub>ij</sub>	.05
regime type <sub>ij</sub> = $\alpha + \beta_1$ terms of trade index <sub>ij</sub> + $\beta_2$ rate change gdp <sub>ij</sub> + $\beta_3$ real working-class wage index <sub>ij</sub> + $\beta_4$ competitiveness of political participation <sub>ij</sub>	.31
real working-class wage index <sub>ij</sub> = $\alpha + \beta_1$ terms of trade index <sub>ij</sub> + $\beta_2$ regime type <sub>ij</sub> + $\beta_3$ competitiveness of political participation <sub>ij</sub> + $\beta_4$ rate change gdp <sub>ij</sub>	.09
terms of trade index <sub>ij</sub> = $\alpha + \beta_1$ real working-class wage index <sub>ij</sub> + $\beta_2$ regime type <sub>ij</sub> + $\beta_3$ competitiveness of political participation <sub>ij</sub> + $\beta_4$ rate change gdp <sub>ij</sub>	.29

From the results of Table 1, I concluded that none of the independent variables in the model suffered adversely from multicollinearity.

The next step was to ascertain whether the model suffered from first-order autocorrelation. A streamlined version of the model (less the country dummies)



was then computed<sup>14</sup>. The Durbin-Watson statistic<sup>15</sup> was reported as 1.04. This confirmed that the model suffered from positive first-order autocorrelation. Following the advice of Ostrom (1990), a lagged endogenous variable was included on the right-hand side of the regression equation for all subsequent analyses. Table 2 displays the results from the final LSDV model<sup>16</sup>.

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<sup>14</sup> The *RATS* program was used for this calculation, v. 4.10.

<sup>15</sup> Also known as the Durbin *d* statistic.

<sup>16</sup> All analyses in Table 2 were calculated using the *RATS* program v. 4.10. A lagged endogenous variable was added to control for the effects of first-order autocorrelation. In addition, the *WHITEPAN* procedure was employed to control for any heteroskedasticity not picked up by the country dummies. The  $p > .05$  level t-test of statistical significance (two-tail) was employed for all analyses, unless otherwise specified.

**Table 2: Final Results of the LSDV Model**

<i>Variable</i>	<i>Coefficient</i>	<i>PCSEs</i>	<i>T-statistic</i>
1. constant	8.99	13.43	.67
2. armed attacks one year lag	.39*****	.13	3.07
3. regime type	-1.80	1.99	-.90
4. rate change gdp	1.48*****	.46	3.22
5. terms of trade index	-.21****	.07	-2.94
6. competitiveness of political participation	5.96*****	1.84	3.24
7. real working-class wage index	-.03	.10	-.32
8. Costa Rica dummy variable	8.77*	4.50	1.95
9. El Salvador dummy variable	11.95**	5.55	2.15
10. Guatemala dummy variable	11.85***	4.82	2.46

N = 110

Uncentered R<sup>2</sup> = .58Centered R<sup>2</sup> = .52

\* p &lt; .03 (one-tailed)

\*\* p &lt; .05 (two-tailed)

\*\*\* p &lt; .01 (two-tailed)

\*\*\*\* p &lt; .005 (two-tailed)

\*\*\*\*\* p &lt; .003 (two-tailed)

A Breusch-Pagan test was performed on the final model to insure that the PCSEs were not contaminated by heteroskedasticity. The resulting chi-square test statistic was 33.77, with a significance of  $p < .000001$ . Thus, I concluded that the model did not suffer from heteroskedastic unit effects.

The final diagnostic performed on the model was directed towards the threat of first-order autocorrelation. A pooled autocorrelation function (ACF) was undertaken to ascertain if the model suffered unduly from first-order autocorrelation. The autocorrelation function (ACF) is a statistic that is used in the identification of temporal disturbances in the data (McCleary and Hay 1980:66). The ACF can also be used to gauge the adequacy of a time-series model by diagnosing serial dependencies in the residuals of the model in question<sup>17</sup>. Residuals in a time-series model should approximate "white noise", i.e., the residuals should be insignificant at low lags. Table 3 presents the results from this diagnostic procedure.

**Table 3: Pooled ACF at 5 Lags**

<i>Lag</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>ACF</i>	<i>-.02</i>	<i>-.03</i>	<i>-.01</i>	<i>-.02</i>	<i>-.18</i>
<i>PCSEs</i>	<i>.56</i>	<i>.57</i>	<i>.57</i>	<i>.57</i>	<i>.57</i>

<sup>17</sup> Essentially, the ACF of the residuals is a series of correlations of the model's residuals with its own past values.

An inspection of the pooled ACF at 5 lags illustrates that the model is not contaminated by temporal disturbances. From these results, I concluded that the model did not suffer adversely from first-order autocorrelation. Therefore, I am confident in the validity of the subsequent significance tests derived from the model.

The highly significant coefficient for the lagged endogenous variable is worth mentioning first. Although a significant *t-statistic* was expected, there is a larger substantive interpretation that can be drawn. Specifically, the internal conditions that contribute to armed attacks are not random, nor are they transitory. Rather, the conditions that contribute to armed attacks are “strongly seated characteristics of political systems that do not change easily or rapidly” (Poe and Tate 1994:860).

The coefficient of regime type (-1.80) was neither significant, nor was it appropriately signed. According to this finding, the number of armed attacks in a country is unrelated to the type of regime<sup>18</sup>. While it may be true that military regimes are indeed more repressive than their civilian counterparts, it appears my research hypothesis must be rejected. According to the sign of the

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<sup>18</sup> A rival operationalization of regime type was undertaken in order to fully explore its dynamics. Specifically, regime type was re-coded as a 0-1 dummy variable, where 0 indicated a civilian regime and 1 indicated a pure military regime. The military regime dummy variable was substituted for the regime type variable in the primary model. The coefficient for the military regime dummy variable was substantially larger than the regime type variable's coefficient. However, the coefficient for the military regime dummy variable failed to attain significance, and was inappropriately signed.

coefficient, armed attacks may be more likely in civilian regimes than in military regimes. However, this finding may be influenced by the military regime of Honduras, which was characterized as mildly repressive and reformist. It may be that regime type does not adequately tap the repressive nature of all Central American governments during this time period. It seems that the substance of the regime (repressive), rather than its form (regime type), is the principle determinant of the number of armed attacks.

The coefficient for the rate change of gross domestic products was highly significant and appropriately signed (1.48). This supports my research hypothesis that armed attacks are more likely during times of volatile economic growth. The volatile economic growth, and the resulting dislocation of large segments of the populace, appear to have been strong catalysts in the number of armed attacks that the region experienced from 1960-1982. Moreover, the disproportionate burdens borne by the populace during this period support the notions that volatile economic growth was not only a major destabilizing force in the region, but also was a forerunner of armed attacks by guerillas seeking to challenge the state's sovereignty.

The coefficient for the terms of trade index was highly significant and appropriately signed (-.21). This validates my research hypothesis that the worse the terms of trade in a country, the more likely armed attacks would be. This finding bolsters previous theories which argued that the region's over-reliance on agro-export policies left their economies overly susceptible to shocks

in the international economic system. The results from a rapidly deteriorating terms of trade sent disastrous shock waves to other segments of the economy. Unemployment, while always a problem in the region, increased to intolerable levels. The worsening terms of trade also led to serious ramifications in the region's Import-Substitution-Industrialization (ISI) model of development. The revenues from the agro-export industry were the primary source of funds, or "fuel", for the ISI development strategy. Because of the initial, and presumed permanent, high rate of return for the region's exports, policy makers borrowed irresponsibly during the 1960s and early 1970s in order to fund their development effort. The result was a huge debt service that became intractable during the decline of the CACM and the debt crisis of the early 1980s. Moreover, a worsening terms of trade weakened the states and reduced the amount of resources at their disposal, and thus increased the likelihood of armed attacks.

The coefficient for the competitiveness of political participation was appropriately signed and significant (5.96). In fact, the most significant relationship in the model was between the competitiveness of political participation and the number of armed attacks. It would seem that the willingness of the regime to allow oppositional activity to occur is indeed related to the likelihood of armed attacks. According to this finding, regimes that are willing to allow oppositional political activity, and who do not exclude certain groups from the process, are less likely to experience armed attacks. On the other hand, intransigent regimes who systematically suppress participation, and

who only allow participation inside the ranks of the regime and its ruling party are more likely to experience armed attacks.

The coefficient for the real working-class wage index was appropriately signed, but insignificant (-.03). It would seem that contemporaneous real wages do not figure into the decision calculus of guerilla groups. This finding seems to suggest that contemporaneous macroeconomic indicators have more bearing/significance than do those at the microeconomic level. Although low wages are a significant source of grievances, they are apparently insufficient, in and of themselves, to mobilize revolutionary guerilla groups to engage in revolutionary activity. For the reasons alluded to previously, this research hypothesis must be rejected.

Finally, the coefficients for the country dummies (Costa Rica, El Salvador, and Guatemala), included to control for heteroskedastic unit effects, are all significant. According to Sayrs (1989) and Stimson (1985), significant unit dummies are indicative of the proper modeling of their effects. Sayrs argues that significant country dummies are "*not an explanation for the between-unit variance or the variance over time*" (1989:28). Rather, they indicate that "the error is not contaminated from effects across time" (Sayrs 1989:26). Thus, from these results, I am confident that the unit effects were properly modeled.

While the majority of results from the previous (primary) model accorded with the theory, the results from the real working-class wage index were considerably less than I had expected. To explore the possibility that I had

misspecified the primary model, I then constructed a series of rival models<sup>19</sup> in order to gauge the robustness of the primary PCT model (Table 2). The appropriately signed, but insignificant, coefficient of the real working-class wage index led me to suspect that the rate change of gross domestic products could possibly be absorbing most of the explanatory power of the economic variables. Therefore, the rate change of gross domestic products was excluded from the first rival model. The results of the first rival model are presented in Table 4.

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<sup>19</sup> I also explored the possibility of interaction effects in the primary model. I constructed a variable that was designed to capture the interaction effects of the real working-class wage index and the terms of trade index. This interaction variable was incorporated into a rival model (not shown). The summed *f-statistic* for this model was moderately lower than the *f-statistic* from the primary model. Another interaction variable was created to capture the interplay between the competitiveness of political participation and the regime type variables. This variable was also incorporated into a rival model (not shown). Again, the summed *f-statistic* for this rival model was moderately lower than the *f-statistic* from the primary model. These findings indicated that the inclusion of interaction effect variables lowered the overall fit of the primary model.



**Table 4: Results of the First Rival Model**

<i>Variable</i>	<i>Coefficient</i>	<i>PCSEs</i>	<i>T-statistic</i>
1. constant	10.59	14.61	.73
2. armed attacks one year lag	.40****	.14	2.82
3. regime type	-1.12	1.89	-.59
4. terms of trade index	-.15**	.07	-2.04
5. competitiveness of political participation	6.66*****	1.85	3.59
6. real working-class wage index	-.09	.11	-.79
7. Costa Rica dummy variable	12.05****	4.22	2.86
8. El Salvador dummy variable	11.10*	6.40	1.74
9. Guatemala dummy variable	11.35**	4.96	2.29

N = 110

Uncentered R<sup>2</sup> = .53Centered R<sup>2</sup> = .47

\* p &lt; .05 (one-tailed)

\*\* p &lt; .05 (two-tailed)

\*\*\* p &lt; .01 (two-tailed)

\*\*\*\* p &lt; .005 (two-tailed)

\*\*\*\*\* p &lt; .003 (two-tailed)

The results in Table 4 indicate that the first rival model has less explanatory power than the primary model (Table 2). All of the variables that were significant in the primary model were also significant in the first rival model (Table 4). However, note that the real working-class wage index remains appropriately signed and insignificant.

The results from the real working-class wage index in the first rival model led me to believe that further analyses were necessary to fully explore its dynamics. Accordingly, a second rival model was undertaken to this end. The variable rate change of gross domestic products was included in the second rival model, along with the real working-class wage index with a one year lag<sup>20</sup>. The one year lagging of the real working class wage index was theoretically justified in my opinion. It is unreasonable to believe that armed attacks will increase concurrently with a corresponding decrease in the real working-class wage index. Rather, an amount of time must pass for the effects of this wage decline to fully set in. The results for the second rival model are presented in Table 5.

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<sup>20</sup> This lagging required a special procedure. Lagging variables in time-series analyses with nonpanel data results in the loss of the first case. However, time-series analyses with panel data require that the stacked data set be disaggregated and the variable lagged on a unit-by-unit basis. This is to retain the "sovereignty" of each unit, and results in a missing value for each unit. A failure to implement this procedure (unless there is an overarching theoretical or technical justification) results in the last case of one unit becoming the first case of the proceeding unit.

**Table 5: Results of the Second Rival Model**

<i>Variable</i>	<i>Coefficient</i>	<i>PCSEs</i>	<i>T-statistic</i>
1. constant	11.12	13.27	.84
2. armed attacks one year lag	.39*****	.13	3.03
3. regime type	-1.92	2.00	-.96
4. terms of trade index	-.21****	.07	-2.92
5. competitiveness of political participation	6.11*****	1.87	3.26
6. real working-class wage index one year lag	-.06	.10	-.66
7. rate change gdp	1.46*****	.47	3.14
8. Costa Rica dummy variable	9.13**	4.55	2.01
9. El Salvador dummy variable	11.80**	5.51	2.14
10. Guatemala dummy variable	11.75**	4.80	2.45

N = 110

Uncentered R<sup>2</sup> = .58Centered R<sup>2</sup> = .52

\* p &lt; .03 (one-tailed)

\*\* p &lt; .05 (two-tailed)

\*\*\* p &lt; .01 (two-tailed)

\*\*\*\* p &lt; .005 (two-tailed)

\*\*\*\*\* p &lt; .003 (two-tailed)

The overall fit of the second rival model (Table 5) is identical to the fit of the primary model (Table 2) (Centered  $R^2 = .52$ ). In addition, all of the significant (and appropriately signed) variables in the primary model remain so in the second rival model, although some variables in the second rival model are not as significant as those in the primary model. Moreover, the primary model is technically superior because of the number missing values (one value per unit) in the second rival model; a necessary result of the lagging process. The coefficient for the lagged real working-class wage index is appropriately signed, yet still failed to attain significance.

One final rival model was constructed to insure that effects of the real working-class wage index (lagged) were modeled exhaustively. In order to quell my suspicions that the rate change of gross domestic products did not garner some of the explanatory power of the lagged real working-class wage index, the rate change of gross domestic products was excluded from the third rival model. The results from the third rival are presented in Table 6.

**Table 6: Results of the Third Rival Model**

<i>Variable</i>	<i>Coefficient</i>	<i>PCSEs</i>	<i>T-statistic</i>
1. constant	13.16	14.38	.92
2. armed attacks one year lag	.39***	.14	2.78
3. regime type	-1.32	1.91	-.69
4. terms of trade index	-.14**	.07	-2.02
5. competitiveness of political participation	6.90*****	1.89	3.65
6. real working-class wage index (lagged)	-.13	.10	-1.23
7. Costa Rica dummy variable	12.49****	4.26	2.93
8. El Salvador dummy variable	11.01**	6.35	1.73
9. Guatemala dummy variable	11.16**	4.93	2.26

N = 110

Uncentered R<sup>2</sup> = .53Centered R<sup>2</sup> = .47

\* p &lt; .05 (one-tailed)

\*\* p &lt; .05 (two-tailed)

\*\*\* p &lt; .01 (two-tailed)

\*\*\*\* p &lt; .005 (two-tailed)

\*\*\*\*\* p &lt; .003 (two-tailed)

The overall fit of the third rival model (Centered  $R^2 = .47$ ) is moderately lower than the fit of the primary model (Table 2). Again, all of the appropriately signed and significant variables in the primary model remain so in the third rival model. Although the *t-statistic* for the lagged real working-class wage index was appropriately signed, it still failed to attain significance. From the results of the primary analysis, and subsequent analyses of the rival models, I must fail to reject the null hypothesis of the real working-class wage index. Based on my analyses, it would seem that real wages are not related to the number of armed attacks in a country<sup>21</sup>.

One final point must be addressed, the continued insignificance of regime type. Regime type remained inappropriately signed and insignificant for all analyses. Originally regime type was included in the design as a surrogate for state terror. It has been well documented that state terror was a crucial factor in the national revolts of contemporary Central America. However, it seems that the regime type variable was unsuited for this task<sup>22</sup>. The final chapter will offer conclusions and suggestions for future research in the analysis of armed attacks and national revolts in Central America.

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<sup>21</sup> Possible reasons for the insignificance will be taken up at a later point.

<sup>22</sup> This finding will be addressed further in the concluding chapter.

## CHAPTER IV

### CONCLUSIONS AND PROSPECTS

The preceding analyses have substantiated several of the theoretical explanations in Booth's theory of Central American rebellions (1991, Booth and Walker 1993). Paradoxically, new questions have emerged that warrant further investigation. In addition, the operationalization of key concepts within the theory may need to be refined in future analyses.

The relationships between the competitiveness of political participation, the terms of trade, the growth rate of the national economy and armed attacks were all highly significant and in the hypothesized direction. The findings in the preceding analysis strongly support the explanation of the region's mixed experience of large-scale political violence. There are several substantive questions that are in need of addressing.

A volatile growth rate in the region was responsible for much of the political violence that ensued from 1960-1982. Is there a larger lesson that can be drawn from this? It would seem that rapid and volatile economic growth is a double-edged sword. While economic growth is a goal for all countries, it has been shown to have several negative consequences. The rapid growth, and subsequent decline, acted as a catalyst in the dislocation of large segments of the populace. In the interests of domestic tranquility, policy makers are faced

with two alternatives. The first is to pursue and implement moderate economic growth programs. Policy makers must avoid the temptation of “quick” and uncontrolled growth programs that are founded upon agricultural goods that are historically susceptible to shocks in the international economy. Economic diversity and an emphasis on activities that maximize their comparative advantage are potential remedies for this conundrum.

The second alternative is to design and implement social programs, as in Costa Rica, and reforms, as in Honduras, that might lessen the negative effects of volatile growth on the populace. It is admittedly unrealistic for policy makers to forego economic programs that yield rapid and tangible benefits. Accordingly, the second alternative seems to be the most plausible. Although social programs and reforms are enormously expensive, the long-term benefits that can be gained from them are well worth the cost.

The terms of trade problem is more difficult. The findings demonstrated that the number of armed attacks that each nation in the region experienced were significantly related to a declining terms of trade. Is there some overarching remedy that can insulate domestic economies from disturbances in the international economic system? Unfortunately, there is no such “elixir”. One remedy might ameliorate the sudden and potentially disastrous downturns in the world economy - economic diversification. Diversification could be advanced by seeking foreign investment and industry to absorb some of the surplus labor



pool. Although much of the workforce is largely unskilled, the success of the *maquiladora* industry in Mexico may serve as a lucrative model to emulate.

The salience of the degree of political participation cannot be overstated. The findings supported the notion that the willingness of the regime to allow “alternative preferences for policy and leadership ... in the political arena” was significantly and negatively related to the levels of large-scale political violence (Gurr 1990:18). For increased and prolonged tranquility in the region, policy makers must expand, or today maintain, the openness of the political system. Opposition actors must be given a place at the table, and allowed opportunities to legitimately influence the system.

At this point, I would like to address the shortcomings of the model in detail. The inability to find a significant relationship between regime type and the number of armed attacks was troubling. A more robust indicator for tapping repression would be an ordinal human rights index (Poe and Tate 1994).

Poe and Tate focused on a subset of human rights (integrity of the person) and employed “the standards-based approach, as opposed to the events data approach” (1994:854-855). Poe and Tate argued “that both torture/killing and imprisonment are rooted in a regime’s willingness to repress its citizens when they are considered a threat” (1994:855). Data for this index might be gleaned from two sources: 1) The U.S. Department of State, and 2) Amnesty International (Poe and Tate 1994:855).

Notwithstanding the utility of the Poe and Tate indices, there were a number of limitations that prohibited their use here. First, these indices are not systematically applicable for years prior to 1975. Amnesty International reports were not available until approximately that time. Second, the U.S. State Department's *Country Reports on Human Rights Practices* have been criticized for biased reporting<sup>1</sup>. Normally, this potential problem could be minimized by conducting "parallel analyses ... with two indicators" (Poe and Tate 1994:855). In fact, the Amnesty International indicator would be ideal<sup>2</sup> for this purpose, but the previously mentioned data limitations prevented its implementation in this analysis.

The inability to find a significant relationship between working-class real wages and armed attacks was perplexing. One possible reason concerns the manner in which wages were measured (index). Perhaps a constant dollar measurement of real wages (and perhaps more time points) would have attained significance in the model. Unfortunately, a lack of systematic data on Central America has plagued scholars for decades. A thorough search through numerous international organization data archives was undertaken to remedy

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<sup>1</sup> Allegations of biased reporting have also been leveled against Amnesty International (Poe and Tate 1994:869).

<sup>2</sup> Poe and Tate reported that the Amnesty International based index was strongly correlated with the State Department based index (.83). "Where the results gained with the two indicators are similar, we can be more confident that our findings are not due to biases in the measures but are, in fact, 'real'" (Poe and Tate 1994:855).

this problem, but to no avail. If the data do exist, they will only likely be found in the statistical abstracts of the host country. There is still the possibility that the theory may be incorrect in this regard. However, more data are needed before that charge can be sustained. It could be that declining real wages affect popular mobilization, at some lag, and that real wages primarily spur mainstream societal elements, rather than the authors of armed attacks (guerillas).

Real wages are frequently employed as a measure with which to gauge the poverty\plight of the working class. Perhaps it would have been more fruitful to research income inequality. However, this endeavor is not without its limitations, as “[b]oth poverty and income distribution present formidable philosophical and measurement problems” (Bulmer-Thomas 1996:13), Bulmer-Thomas argues that the Gini coefficient is a “robust” and “easily comparable” measure to gauge income inequality in a country (1996:16). Alas, the lack of systematic Gini coefficient data prohibited me from employing this measure in this time-series analysis<sup>3</sup>.

Although the limitations of wage, income inequality, and repression measures made their implementation in this analysis impossible, researchers have increased their efforts to systematically gather data in recent years. It is

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<sup>3</sup> Bulmer-Thomas contends that Gini coefficient data is “widely available” from Latin America (1996:16). This contention may hold true for countries such as Argentina, Brazil, Chile, and Mexico, but corresponding data for Central America is sparse. I acquired what I believe to be the most comprehensive data set on income inequality from the World Bank. Even this data set was unsuited for a time-series analysis of Central America.

quite possible that these measures could be employed in an analysis of revolutionary activity during the 1980s.

From the preceding analyses, several conclusions can be tentatively drawn about the actions of guerilla groups. It appears that armed attacks against the state are not random occurrences, but rather, it seems that they arise in response to certain economic and political conditions. Specifically, it seems that guerilla groups may be attuned to macro-economic indicators (e.g., rate of growth and terms of trade) and certain state responses (e.g., competitiveness of political participation), and might challenge the sovereignty of the state under certain circumstances. It may be that these conditions provide rebels with a "window of opportunity" in which to openly challenge the state's sovereignty. Thus, it appears that rebels may be shrewd political entrepreneurs, who will alter their responses according to cues in the political and economic environments. Popular protest mobilization (not measured here) might also respond more sensitively to adverse economic change, such as eroding wages. However, this study has failed to establish a wage - violence link.

If the 1980s were a decade of stabilization for Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua, the 1960s and 1970s were decades of radical transformation. Violence levels and state repression, while at times intense in previous years, have not reached the magnitude that was seen from 1978-1982. The current development strategy in the region, the New Economic

Model<sup>4</sup> (NEM), holds promise for economic development, and may help to reduce poverty and income inequality, which were two of the principle grievances that plagued the region in previous decades. The “gamble” of the NEM, and the hard lessons learned from the past, provide the region with significant hope for economic and social progress in the 21st century.

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<sup>4</sup> The New Economic Model (NEM) has three phases. “The first, immediately after the debt crisis [(1982)], was dominated by the need simply to stabilize the economy” (Foxley 1996:1). The second is best characterized as a judicious blending of privatization and financial liberalism, along with a reduction in trade barriers (Foxley 1996:1). “Finally there is the third phase, a stage in which, having gone successfully through the two previous ones, countries are able to increase investment significantly and develop a capacity to increase productivity in a more or less constant way” (Foxley 1996:1).

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