CONFLICT ECONOMICS: THEORETICAL AND EMPIRICAL APPLICATIONS

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DEDICATION

To my Late Grandfathers Nasser Elkanj
and Ibrahim Elbitar

To my Father, Mother and my three Sisters
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The work presented in this thesis is, to the best of my knowledge and belief, original except as acknowledged in the text. I hereby declare that I have not submitted this material, either in whole or in part, for a degree at this or any other institution.

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This thesis examines distinctive issues related to conflict theoretically and empirically. The theoretical part in this thesis investigates the following issues: the entitlement failure model, the defence spending allocation model and the terror cycles model. The empirical part focuses on the following: the CMP, the beta-index and beta-mobility idea, and the relation between economic inequality and violent social conflicts.

The thesis argues that the introduction of market ethos and democratisation in developing nations has created a fragile economic and social system. It demonstrates the existence of a political equilibrium that maximises the probability of re-election of an incumbent government. This demonstrates the existence of a region of capital allocation such that if the optimal allocation of capital lies in this specific region there does not arise any distribution failure. In the second part we highlight two types of conflicts, namely market conflicts and political conflicts and attempt to weave them together to illuminate an important intersection between the economy and the polity.

The thesis argues that conflicts are to some extent driven by international tension, or global, ideological and geo-political factors. Notwithstanding the global influence, local factors such as income inequality, income growth or lack of it, and political institutions, have an influence on conflicts.

The thesis proposes a participatory conflict management procedure (CMP) that aspires to discover stable points for collaboration between confrontational parties.
Stable points are mutual joint cooperative arrangements that diminish the probability of conflict re-escalation.

The thesis presents a fundamental theoretical analysis for a new index of conflicts beta ($\beta$) driven by international tension. In this section we show how to measure the extent to which local conflict in a country is driven by international tension/global factors. We then offer an empirical foundation to the beta index by calculating the beta values for 92 nations for which we have data from 1970–2004.

The thesis analyses the relationships between violent conflict and inequality. An econometric model is estimated using binary dependent variable techniques to capture the relation between violent conflict and inequality across Middle Eastern and Arab countries. It constructs two models based on the theoretical model and actual data: the first is a dummy variable that takes a value of one when a conflict has resulted over 1000 battle deaths in a given year and country. The second is a dummy variable that takes a value of one if the conflict is completely internal, and another which is equal to one when the conflict involves an external actor.
CHAPTER 1

INTRODUCTION

1.1 Defining Conflict

For the last 60 years, the Middle East\(^1\) has remained an unstable region as a result of political, ethnic, and religious conflicts in the region\(^2\). The heart of these is the Arab-Israeli conflict, which has been the focus of international diplomacy and worldwide media for decades. The hostility between Arabs and Israel has led to acts of terrorism, counter-terrorism and inter-state armed conflict (Bailey, 1990). The Arab-Israeli conflict has included 26 crises and five major wars: 1948 Arab-Israeli war, 1956 Suez war, 1967 Six Day war, 1973 Yom Kippur war, 1982 Lebanon war, and 2006 Lebanon war\(^3\). In addition, the region has experienced two wars in Iraq (1991 and 2003), and the Iran-Iraq war between 1980 and 1988. The Middle East is the most militarised region in the world with one-third of world’s arm imports going to the region (Bureau of Verification and Compliance, 2000).

It is conventional before starting any discussion about the term ‘conflict’ to define it. There has been no generally accepted definition of ‘conflict’ in the literature until now. The word derives from the Latin *conflicto*, meaning ‘striking together with

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\(^1\) The Middle East is a geographical area without any precisely defined borders, but usually including Bahrain, Egypt, Iraq, Iran, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian Territories, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, and Yemen.

\(^2\) There have been several conflicts in the Middle East since 1948: Arab-Israeli conflict, Jordan-Syria tensions, Jordan government-Palestinian Liberation Organisation war, Lebanese civil war, Libya-Egypt tensions, Kuwait invasion, Iraq-Iran war, and invasion of Iraq.

force’. Pondy (1967) suggests other definitions, stating, ‘The term conflict has been used at one time or another in the literature to describe: (1) antecedent conditions (for example, scarcity of resources, policy differences) of conflictful behaviour, (2) affective states (e.g. stress, tension, hostility, anxiety, etc.) of the individuals involved, (3) cognitive states of individuals, i.e., their perception or awareness of conflictful situations, and (4) conflictful behaviour, ranging from passive resistance to overt aggression.’ Conflict has a wide range of activities such as: civil wars, coups d’état, crime, riots, strikes… and so on.

Burton defines conflict as ‘a relationship in which each party perceives the others’ goals, values, interests or behaviour as antithetical to its own.’ Deutsch (1973) distinguishes between conflict and competition. He assumes that although competition produces conflict, not all conflict reflects competition. Folberg and Taylor (1984) distinguish between conflict and dispute, where conflict is interpersonal and unknown except to the individual, and dispute is interpersonal and manifested or communicated.

The Stockholm International Peace Research Institute (SIPRI) defines conflict as ‘the use of armed force between the military forces of two or more governments, or of one government and at least one organised armed group, resulting in the battle-related deaths of at least 1000 people in any single calendar year and in which the incompatibility concerns control of government and/or territory’ (Dwan and Holmqvist, 2005). Another definition is presented by Uppsala Conflict Database (UCDP): ‘a contested incompatibility that concerns government or territory or both, where the use of armed force between two parties results in at least 25 battle-related
deaths. Of those two parties, at least one has to be the government of a state’ (Wallensteen and Sollenberg, 1997 and 2005).

This research on conflict is divided into three main aspects. First we explain how economic inequality can cause conflict. In the existing literature econometric studies have not convincingly established such causality (see Humphreys, 2003), though qualitative studies clearly point to inequality as a major source of conflict. The major problem in the existing literature is that econometric research has used an overall measure of inequality instead of group inequality (see Humphreys, 2003). Our research will develop theoretical models and offer empirical findings to explain the role of economic inequality in conflicts. This research also intends to explain how politics can precipitate conflicts. The politics of conflict is based on the idea that the choice of government policies plays a significant role in determining the possibilities of conflict. The research will examine how government policies can lead to group formation to cause inter-group conflicts.

Second, we propose a possible participatory conflict management procedure (CMP) that aspires to discover stable points for collaboration between Arabs and Israelis. Stable points are mutual joint cooperative arrangements that diminish the probability of conflict re-escalation. There are examples of joint actions that have brought peace, as in Europe where a small joint action between four countries to form a coal and steel community was the initial step that led to the European Union of 27 states. The formation of the European Union ended a century-old conflict and brought peace between Germany and France. CMP consists of four phases: the first phase identifies the crucial actors, the objectives of each actor, and the relative importance of each
objective for the different actors. The second phase detects local stable positions. The third phase embraces a certain process with the different actors about what sort of joint project would be coherent with the most satisfying outcome. Finally, it reaches several crucial objectives for both parties, and a MATHLAB program (version 7, release 14) is used to verify the stability of all possible joint actions among all conflicting parties.

Third, our research will help in the evaluation and measurement of the risk of conflict for an individual country with reference to international tensions; in other words, how to determine to what extent local conflict in a country is driven by international tension and global factors.

### 1.2 Research Problems

This research seeks to present answers for the following research questions:

a. What are the dynamics of conflicts and peace in the Middle East before and after 1948? What are the most important peace attempts during this period of time? This is a historical study that will concentrate on the Arab-Israeli conflict.

b. How are local conflicts created in developing nations along with democratisation and the spread of market principles? What are the constraints on and incentives for conflicts? Why in some societies do conflicts recur while other societies retain a peaceful composition? We will examine the source of conflicts (such as poverty) in a set-up in which democratic
principles and market ethos are introduced into a traditional and developing economy/society.

c. Are there any links between local conflicts and rebellions vis-à-vis global/international tensions? We offer various models and test them empirically.

d. What are the stable positions for cooperation amongst belligerent groups? What are the possible CMPs that aspire to discover stable points for collaboration between confrontational parties? This is an experimental/questionnaire-based study using a feasible participatory conflict management procedure, CMP. To gather data for this experiment we will use a questionnaire to elicit the sensitivity of each policy objective for each actor.

e. How are local conflicts created in developing nations with democratisation and spread of market principles which lead to increased inequality? How can these conflicts be avoided through a reduction in inequality? We will examine the source of conflicts (such as poverty) in a set-up in which democratic principles and market ethos are introduced into a traditional and developing economy/society.

f. What is the relationship between inequality and conflict? What is the relationship between conflict, financial instability, poverty, inflation, arms imports and social expenditure? An empirical study will test the effect of different variables on the probability of conflict in Middle East countries.
1.3 Literature Review

Before the 1950s, work in the area of conflict was performed in the main by political scientists. This has changed with the growing awareness of economists such as F. Y. Edgeworth, J. M. Keynes, V. I. Lenin, Karl Marx, Vilfredo Pareto, A. C. Pigou, David Ricardo, Lionel Robbins, Joseph A. Schumpeter, Werner Sombart, Adam Smith, Thorstein Veblen, Knut Wicksell, J. Hirshleifer, Walter Isard, S. Skaperdas, K.E. Boulding, Michelle R. Garfinkel, Paul Collier, H. I. Grossman, and many others. Moreover, an increasing number of academics and policy makers have been focusing on the economic dimensions of armed conflict. More efforts have been directed at understanding the dynamics of conflicts and at developing more effective policies for conflict resolution at the same time.

The initial motivation for violent conflict between two groups (or even between two individuals), may be related to the ‘rage of the rich’. On the other hand, Baron and Greenberg (1990) state that ‘opposing interests lie at the core of conflicts.’ They note that there is substantial indication that conflict in work settings often derive from the relations between individuals and are based on personal characteristics, a view endorsed by Forsyth (1990). Forsyth (1990) indicates three main mechanisms that lead to conflict: personal characteristics, competition over scarce resources, and the use of threatening and contentious influence strategies.

Since the Second World War, we have seen civil wars, regional crises, international tensions, and threats of global war especially in the Middle East. Azar et al (1978) classify conflicts into three categories: ‘clearly international conflicts and wars,’ ‘clearly civil wars,’ and ‘a mixture of international and civil wars’ (Azar, Jureidini,
and McLaurin, 1978). They find that most conflicts occur in the third world, and that
the intervention of the Big Powers (USA and USSR) in these conflicts adds to their
severity and lead to dreadful consequences. Isard and Chung (2000) go further,
arguing that such interference from a third party introduces complexities which
prevent pleasing cooperation between the two original parties.

Most of the new literature on conflict has focused on what belligerents might gain
during the course of conflict (see Jean and Rufin, 1996; Keen, 1998; and Kaldor,
1999); this offers a perspective from which conflict is not seen as something that
interrupts economic activity. The motivations for conflict are tied to the opportunities
they offer individuals or states. A study by Mwanasali (2000) notes that various
states benefit from the war in the Democratic Republic of Congo. In this research we
will try to check whether these opportunities, in which some groups benefit at the
expense of others, can result in regional inequality that leads to more violent
conflicts.

1.3.1 General Review

Marshall defines economics on p. 1 of the Principles of Economics as:

    ... ECONOMICS is a study of mankind in the ordinary business of life; it
examines that part of individual and social action which is most closely
connected with the attainment and with the use of the material requisites of
well-being (Marshall, 1961)

The words ‘conflicts’, ‘crime’, ‘war’, and ‘politics’ do not appear in the index to
Marshall’s Principles of Economics. With regard to the power of love and chivalry
as organising principles of social life, Adam Smith said:
In civilized society [man] stands at all times in need of the co-operation and assistance of great multitudes, while his whole life is scarce sufficient to gain the friendship of a few persons (Smith, 1993)

Love and friendship may sustain cooperation among a few partners, but the elaborate division of labour essential for modern life has to rely on the force of self-interest. A similar definition has been introduced by Hayek:

These habits [of generosity] had to be shed … to make the transition to the … open society possible … [The] mores [of the market economy] involve withholding from the known needy neighbours what they might require, in order to serve the unknown needs of the thousands of unknown others. (Hayek, 1979).

Hayek thinks that economists are civilising students through teaching them selfishness. Vilfredo Pareto offers another definition:

The efforts of men are utilized in two different ways: they are directed to the production or transformation of economic goods, or else to the appropriation of goods produced by others (Pareto, 1966).

Pareto is saying that, yes, you can produce goods for mutual beneficial exchange with other parties; also you can get rich in other way through grabbing goods that someone else have produced.

The main story line of human history is to maintain the balance between these modes of economic activity (the one leading to greater aggregate wealth, and the other to conflict over who gets the wealth) (Hirshleifer, 2007). Karl Marx did appreciate the importance of the dark side of the conflict option.
This image was twisted when Marx, mentioned that all kinds of conflict, including wars among nations and even the battle of the sexes, could be squeezed into the ill-fitting mold of the class struggle:

The history of all hitherto society is the history of class struggles (Bartlett, 1968)

Niccolo Machiavelli saw matters more clearly:

It is not gold, but good soldiers that insure success ... for it is impossible that good soldiers should not be able to procure gold (Bartlett, 1968)

This is Machiavelli's version of the golden rule: *he who gets to rule, will get the gold.*

Human history is a record of the tension between the way of Niccolo Machiavelli and what might be called the way of Ronald Coase. According to Coase's Theorem, people will never pass up an opportunity to cooperate by means of mutually advantageous exchange. What might be called Machiavelli's Theorem says that no one will ever pass up an opportunity to gain a one-sided advantage by exploiting another party. Machiavelli's Theorem standing alone is only a partial truth, but so is Coase's Theorem standing alone.

With regard to international conflict, Carl von Clausewitz offered a definition:

For achieving the political aims that are the end of war, the decision by arms is what cash settlement is in trade.

Clausewitz is saying, a state remains influential in peacetime only owing to the damage it could inflict in the event of war.

But what of the social arrangements, laws, and judicial systems that humans have devised to temper the power struggle? That brings us second proposition: *when*
people cooperate, if is generally a conspiracy for aggression against others (or, at least, is a response to such aggression). A nation whose institutions favor Coasian cooperation, Marshall's "ordinary" business activity, will grow wealthy. But, Adam Smith told us:

An industrious, and upon that account a wealthy nation, is of all nations the most likely to be attacked (Smith, 1993).

If the gains from group aggression are big enough, invaders can get their act together. Sigmund Freud said:

It is always possible to bind together a considerable number of people ... so long as there are other people left over to receive the manifestations of their aggressiveness (Tripp, 1970).

And on the defensive side, invasion cements the unity and fighting power of the group attacked. The bottom line is that nations with wealth-enhancing laws and institutions will not be able to enjoy the fruits thereof unless, when challenged, they can put up a tough fight. And the same holds for political parties, clubs, families, and business firms.

1.3.2 Models of Conflict

The main inputs for conflicts from an economic perspective are the military manpower. In the past, the call to arms was answered by volunteers; but for the all consuming large-scale conflicts of the nineteenth and twentieth centuries, reliance on volunteers was deemed inadequate. Conscription became the norm. Conscription is the compulsory enlistment of young men citizens for military service. Beyond conscription and volunteer forces lies another potential source of manpower: mercenaries, or employees of private military and security companies (Brauer and Van Tuyll, 2008).
Other main inputs of conflict from an economic perspective are the use of weapons: swords, cannons, guns, bombs, missiles, and so on. However, these are not used to produce useful output, as in the case of ordinary economic production: each party gathers the inputs as a means of self-defence/offensive against counter parties. These inputs, called by Hirshleifer (1989) ‘technologies of conflict’, result in wins or losses for the parties involved in the conflict. These technologies of conflict have been introduced to the literature as a contest-success function as Tullock (1980) did for rent-seeking activities.

Consider two opposing parties 1 and 2 with a choice of weapons $G_1$ and $G_2$ (for guns). For any combination of guns we could expect the probability of winning or losing for each party using the following model:

\[
p_i(G_1, G_2) = \begin{cases} 
\frac{f(G_i)}{f(G_1) + f(G_2)} & \text{If } \sum_{i=1}^{2} f(G_i) > 0; \\
\frac{1}{2} & \text{otherwise},
\end{cases}
\]

For $p_i(G_1, G_2)$, $i = 1, 2$, to be probabilities, they need to take on values between 0 and 1 and add up to 1, or equivalently they must satisfy the following:

\[
0 \leq p_2(G_1, G_2) = 1 - p_1(G_1, G_2) \leq 1.
\]

Moreover, we can expect an increase in one party’s guns to increase her own winning probability and reduce the winning probability of her opponent; that is, $p_i(G_1, G_2)$ should be increasing in $G_1$ and
decreasing in $G_2$. This model has been employed by scholars in different fields, such as Schmalensee (1972) in the economics of advertising, Szymanski (2003) in sports economics, Konard (2005) in contests, and Tullock (1980) and Nitzan (1994) in rent seeking. Luce (1959) axiomatizes such probabilistic choice functions in relation to utility theory, while Skaperdas (1996) provides and axiomatization in relation to contests. Key to both axiomatizations is an Independence of Irrelevant Alternatives property. In the context of conflict, thus property requires that the outcome of conflict between two parties depend on the amount of guns held by these two parties and not on the amount of guns held by third parties to the conflict.

The most commonly used model is the one employed by Tullock (1980), now used in the economics of conflict:

$$ p_i(G_1, G_2) = \frac{G_i^m}{G_1^m + G_2^m} $$

(2)

Where $m > 0$ and $f(G) = G^m$.

Hirshleifer (1989) states that the probability of winning in this case depends on the ratio $\frac{G_1}{G_2}$.

Another functional form model is:

$$ p_i(G_1, G_2) = \frac{e^{kG_i}}{e^{kG_1} + e^{kG_2}} = \frac{1}{1 + e^{k(G_2-G_1)}} $$

(3)

Where $f(G) = e^{kG}$, and $k > 0$
All three models assume that the sum of winning probabilities for all parties concerned equal 1. There are circumstances, however, where the result of war may be a draw or an impasse. Blavatsky (2004) assumes a new model which takes into consideration such a possibility:

\[
p_1(G_1, G_2) = \frac{f_1(G_1)}{1 + f_1(G_1) + f_2(G_2)}
\]

(4)

In this research, those models will be developed to reach:

- Economic and social models of irrational conflicts
- A model of the evolution of conflicts in developing nations along with democratisation and spread of market principles
- A combination of the probabilistic voting model and the conjectural variations model in order to endogenise the nature of competition and government policy.

1.3.3 The Economics Origin of Conflict

1.3.3.1 Wealth and Conflicts

At a first glance one might say that rich nations would be more violent because they have more to fight over. However, a number of researchers have shown that wealth reduces the likelihood of civil war. This negative correlation between wealth and conflict is found in many studies such as Collier and Hoeffler (2002a) and Fearon and Laitin (2003). Humphreys (2003) states that a country with a GDP per capita equal to $250 has a predicted probability of war onset of 15%. This probability is
reduced by half if the GDP per capita rises to $600, and to 4% if the GDP reaches $1,250. Fearon and Laitin (2003) predict that countries with a GDP per capita of approximately $600 have an 18% probability of engaging in conflict over the next decade, dropping to 11% once the GDP per capita rises to $2,000, and to less than 1% at $10,000. How can this be explained? Homer and Dixon (1994) and Fearon and Laitin (2003) suggest that wealthier countries are more capable of protecting their assets against rebels. Homer-Dixon (1994) theorises that poverty causes violence, and indicates scarcity as a cause of migration, which result in conflict between identity groups over resources.

The motivation to use violence may increase if the value of assets increases. Evidence for this is found in Bates’ (2001) historical literature on European development. A study by Keen (2000) mentions that if there is a rise in the value of assets of a country, then this may lead to a rise in the value of controlling the state.

Mack (2002) raises a doubt, wondering why, if increasing wealth leads to decrease in conflicts, we are seeing the opposite. An explanation is offered by Humphreys (2003): perhaps there are other variables that outweigh the mitigating effects of increased wealth, such as population size. Another reason is the uneven spread of economic growth across different regions (Humphreys, 2003).

Given all this, what is the relationship between wealth and inter-state conflict? Some scholars argue that as states get richer they look abroad for invasions. For example, a study by Choucri and North (1975) notes that increased wealth in a country leads to an increase in their needs for goods and resources; any shortage in goods and
resources may encourage a country to satisfy their needs through direct control over resources of poorer countries⁴. In contrast, a study by Zuk (1985) argues that conflict-oriented states during the period 1870–1914 were able to fill their needs through trade with sovereign states. Certainly, the statistical evidence for this relation is varied, and the majority of current research suggests that there is no strong relationship between wealth and conflict. Moreover, there is no strong relation between the business cycle and the onset of conflict, as a study by Thompson (1982) involving France, Britain, Germany, and America over the period 1792–1973 argues. These studies, though valuable, do not address the question of belligerence between equally wealthy states, or the role of governmental decisions in inciting conflict. In this research we will try to fill this gap by studying the relation between wealth and inter-state conflict in the Middle East countries.

1.3.3.2 Inequality and Conflicts

Does economic inequality breed conflict in nations? It is widely agreed that ‘good things’, such as money income, have to be more or less evenly distributed. In the real world good things are not equally distributed, which may increase the risk or the cause of conflicts (as is assumed by political scientists and some Marxist theorists). The relation between inequality and conflict has been of interest to several economists (Lichbach, 1989; Cramer, 2003). There are two kinds of inequality: ‘Horizontal Inequality’ and ‘Overall Inequality.’ ‘Horizontal Inequality’ refers to the differences in income between regional or ethnic groups while ‘Overall Inequality’

⁴ This study looked at data from 1870 until 1914.
considers the differences between incomes of all individuals in an economy. The most common, widely-used measure of income inequality is the Gini coefficient\(^5\).

If one group benefits more than another from economic growth, this may increase inequality, and in turn may increase dissatisfaction amongst some sectors of the population. This may result in an outbreak of conflict or intensify a current conflict (Alesina and Perotti, 1993; Stewart, 1998). Alesina and Perotti (1993) argue that inequality is correlated with a greater incidence of political instability. The worst effect of these conflicts may be additional economic disruption which deepens existing inequalities.

Recent empirical and theoretical studies have suggested that inequality is strongly implicated in the emergence of conflicts. In recent years many developing countries have faced processes of industrialisation and urbanisation that brought with them institutional changes and market uncertainties. Often the results were that some people became fairly wealthy while others received a lower income. One reason is that strategies for income growth do not include any method that ensures that lower income earners will gain an advantage from it. There is a sizeable literature dedicated to an analysis of the relationships between different forms of inequality and political and social conflicts (for example, Gurr, 1970; Sigelman and Simpson, 1977; Muller, 1985; Weede, 1987; Boyce 1996; and Wickham-Crowley, 1992). An examination of recent literature on the economic causes of civil war in developing countries, suggests that inequality posited as an important cause of conflict (Schock, 1996; Boyce, 1996; Nafziger and Auvinen (1997); Stewart, 1998; Elbadawi, 1992; Collier,

\(^5\) The Gini coefficient is an index between 0 and 1, where 0 corresponds to perfect equality (everyone gets exactly the same income) and 1 corresponds to perfect inequality (one person gets all the income and others gets nothing).
2000b; Collier and Hoeffler). Schock (1996) tests the hypothesis that economic inequality is positively related to violent conflict, using quantitative cross-national lagged panel data to examine political violence between 1973 and 1977. He reaches a result that supports the hypothesis. Boyce (1996) points out that the main reason behind the violence in El Salvador is inequality, and in particular especially the unequal distribution of land. An empirical study by Nafziger and Auvinen (1997) indicates that income inequality (based on the Gini index) is associated with political conflict and complex humanitarian emergencies. Stewart (1998) demonstrates a positive relation between horizontal inequalities and civil conflict, by examining case studies of developing countries such as Afghanistan, Burundi, Cambodia, El Salvador, Guatemala, Haiti, Liberia, Nicaragua, Rwanda, Sierra Leone, and Somalia. Elbadawi (1999) advances poverty and ethnic fractionalisation as main causes of civil war. Collier (2000b) and Collier and Hoeffler (2000) mention that greed and not grievance causes civil wars. Other studies by Collier and Hoeffler (1998, 2002a, 200b) propose that inequality does not have a significant impact on the likelihood of internal conflict.

With these debates, we are going to examine the relation between inequality and conflict in the Middle East region. These countries have received little attention in the empirical literature on the relationship between inequality and conflicts. This research will help to fill the gap.

**1.3.3.3 Natural Resources and Conflicts**

Here, the struggle about access to and control over important resources (as water, oil, gold, diamonds, productive land etc.) is the differentia specifica of the conflict.
Inequities in the distribution, use, needs, desires, and consequences of resources management have been sources of tension and international and intrastate disputes. According to some resource conflict researchers (Ehrlich, Gleick, and Conca 2000) four important conditions influence the likelihood that resources will be the object of military or political action: (1) the degree of scarcity; (2) the extent to which the supply is shared by two or more groups/states; (3) the relative power of those groups; and the ease of access to alternative sources. The most present approach in the resource conflict literature is a “resource scarcity” as a main conflict contributor. This approach links resources considers resource scarcity (supply induced, demand induced or absolute scarcity), as well as environmental degradation as a key conflict issues (Homer-Dixon 1999). Homer-Dixon and Percival (1997), stressing the causal pathways between conflicts and resources in some developing countries, argue that under certain conditions, the scarcity of renewable resources such as cropland, forests and water generate social effects (such as poverty, migration, and weak institutions) and produce tensions and conflicts.

The Literature on civil war in developing countries (note many Middle Eastern countries are inter-state wars) emphasises poverty (as a result of growth failure) and horizontal inequalities (not vertical) on the grievances side; and natural resource abundance on the greed side (Murshed and Tadjoeddin, 2009). For some scholars, natural resources may provide reasons as to why internal conflicts are fought. There have been several studies regarding the relationship between natural resources and conflict. A study by Ross reaches the conclusion that natural resources have contributed to the onset, duration, and intensity of many conflicts (Ross, 2001). Research by Collier and Hoeffler (2000, 2002a, 2002b) suggests that countries whose
wealth is dependent on the export of primary commodities are prone to civil violence. Collier and Hoeffler argue that conflict may be explained by either grievance or greed, but conclude that if we want to best understand the causes of contemporary civil wars we should concentrate more on the greed of rebel groups than on explanations based on grievance\(^6\).

There are at least eight complementary mechanisms that would explain the relationship between the variables, natural resources and conflict:

- Natural resources could be a way to finance rebellions.
- If natural resources are concentrated in particular part of a country then this may encourage dissatisfied persons in that part of the region to break away.
- Natural resources may be associated with grievance rather than greed. This may happen when natural resources are seen as unjustly distributed, as in Sierra Leone and Nigeria.
- Governments should not establish strong institutions if they depend on natural resources rather than taxation for their continuation (see Moore 2001).
- The manufacturing sector of an economy dependent on natural resources could be weakened by fluctuations in the value of natural resources (Dutch Disease).
- Countries dependant on natural resources may be more susceptible to terms-of-trade shocks.

\(^6\) Collier and Hoeffler (2002b) state: ‘We test a “greed” theory focusing on ethnic and religious divisions, political repression and inequality. We find that greed considerably outperforms grievance’.
• The availability of natural resources in certain areas could encourage other parties to engage in or foster conflict (see Dashwood, 2000 and Meldrum, 2000).

• In some cases there may be an observed correlation between primary resource dependence and conflict even if natural resources do not cause conflict.

Table 1.1: Conflicts Linked to Resource Wealth, 1994 – 2001

<table>
<thead>
<tr>
<th>Country</th>
<th>Duration</th>
<th>Type</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>1978 – 2001</td>
<td>Lootable</td>
<td>Gems, opium</td>
</tr>
<tr>
<td>Angola (UNITA)</td>
<td>1975 -</td>
<td>Both</td>
<td>Oil, Diamonds</td>
</tr>
<tr>
<td>Angola (Cabinda)*</td>
<td>1975 -</td>
<td>Unlootable</td>
<td>Oil</td>
</tr>
<tr>
<td>Burma</td>
<td>1949 -</td>
<td>Lootable</td>
<td>Timber, gems, opium</td>
</tr>
<tr>
<td>Cambodia</td>
<td>1978 – 1997</td>
<td>Lootable</td>
<td>Timber, gems</td>
</tr>
<tr>
<td>Colombia</td>
<td>1984 -</td>
<td>Both</td>
<td>Oil, opium, coca</td>
</tr>
<tr>
<td>Congo Republic</td>
<td>1997</td>
<td>Unlootable</td>
<td>Oil</td>
</tr>
<tr>
<td>Democratic Republic of Congo</td>
<td>1996 – 1998</td>
<td>Both</td>
<td>Copper, coltan, diamonds, gold, cobalt, coffee</td>
</tr>
<tr>
<td>Indonesia (Aceh)</td>
<td>1975 -</td>
<td>Unlootable</td>
<td>Natural gas</td>
</tr>
<tr>
<td>Indonesia (West Papua)*</td>
<td>1969 -</td>
<td>Unlootable</td>
<td>Copper, gold</td>
</tr>
<tr>
<td>Liberia</td>
<td>1989 – 1996</td>
<td>Lootable</td>
<td>Timber, diamonds, iron, palm oil, cocoa, coffee, marijuana, rubber, gold</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>1988 -</td>
<td>Unlootable</td>
<td>Copper, gold</td>
</tr>
<tr>
<td>Peru</td>
<td>1980 – 1995</td>
<td>Lootable</td>
<td>Coca</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>1991 – 2000</td>
<td>Lootable</td>
<td>Diamonds</td>
</tr>
<tr>
<td>Sudan</td>
<td>1983 -</td>
<td>Unlootable</td>
<td>Oil</td>
</tr>
</tbody>
</table>


*Conflict did not generate 1000 battle deaths in any twelve-month period.

1.3.3.4 Social Contracts

As we have mentioned in the previous literature review that there are several factors which contribute to the risk of violent conflict such as: inequality, poverty and natural resources appropriation. Some societies have such conditions but still do not descend into violent conflict. The main reason behind that is what Addison and
Murshed (2001) call ‘social contracts’. Addison and Murshed mean by social contracts a framework of widely-agreed rules, both formal and informal, that govern the allocation of resources, including resource rents and the peaceful settlement of grievances. If this contract is feasible and enforceable, it can be enough to hold down, if not eradicate the probability of a violent conflict.

1.3.4 Conflict Management Procedures (CMP)

How can a conflict be reduced? The management of conflict has been an area of concern and interest to scientists for many years. Conflict management designates in the first instance the perception of the mediator (conflict advisor or conflict manager), who is called upon to help both parties (or ultimately one of them). One can speak about conflict dealing also when during the conflict both parties look for a consensual solution, without asking for an external assistance. The forms of approaching and dealing with conflicts could be of very different nature. In compliance with Reimann (2005) there are consequently tree forms of dealing with conflict that are to be outlined: conflict settlement, conflict resolution, and conflict transformation.

The conflict management procedure (CMP) is a step-by-step procedure to identify joint local satisfying positions for cooperation amongst belligerent groups (see Isard and Christine, 1983). Joint local satisfying actions are small cooperative arrangements that are comparatively stable, or less likely to re-escalate.

This mutual improvement joint action was first developed by Isard (see Isard, 2002 and Isard and Moyersoen, 2003). Isard and Moyersoen (2003) explore how prospect
theory can be relevant and effective in real conflict situations. The authors start with the proposal in Isard and Hara (2003a, 2003b), where building a new hotel would create 11000 to 21000 jobs and increase Israeli security 18.3% to 35%. Isard and Moyersoen acknowledge that it is more valuable to base experimental evidence on actual past conflict, and argue that a stable position can be reached by using elements of prospect theory. The authors take the French-Flemish conflict and propose to build a hotel in Brussels. Knowing that Brussels is capital of the Flemish population, Flemish concerns with urban beautification and high French unemployment are factors that make such a proposal acceptable to both participants and guarantee a stable position. Using a MATHLAB computer program and best estimates, the authors create a map of a possible utility function for the French and Flemish for different portions from a supposed total pie of $100 million. Their next step is to be aware of the veto power of French-Flemish participants and to take into consideration the positive effects of rational interactions. On the basis of utility mappings we find that there are two locations which are local joint satiation points for both participants (figure 1.1). Isard and Moyersoen conclude that in certain conflicts it may be possible to indicate local joint satiation points, but that there is a need for more advanced and deeper research.
CMP combines two theoretical tools: [a] the prospect theory developed by the Tversky School and the related intertemporal choice theory developed by Ainslie and Herrnstein (1981); and [b] the hierarchical process analysis and procedures developed by Saaty (1980). CMP is based on three main steps: [a] the elicitation and analysis of conflict; [b] the detection of stable neighbourhood positions; and [c] deliberation. In elicitation and analysis we will [a] identify the crucial actors and policy objectives; [b] elicit the relative importance of each policy objective for each actor; [c] elicit the sensitivity factors; and [d] combine AHP procedure with sensitivity analysis to estimate the preference step-function for all actors and objectives. The elicited information allows us to estimate a preference step-function
for each objective and for all actors. We will follow a similar strategy to that used by Isard and Chung (2000) (see the annex for more information). The second phase in CMP detects local stable positions, and the third phase includes a deliberation process with the involved parties about what sort of joint project would be coherent with the detected satisfying position.

This research is concerned with effective conflict analysis that leads to workable mediation or management in public policy decision making. For such decision making we abandon the optimisation approach from a normative standard economic perspective, in which agents have preferences suggested by neoclassical economics. Instead we would like to propose a conflict management procedure by drawing up a topical mental accounting framework: that is to say, by using a descriptive set of cognitive operations that guide agents to evaluate their options. In general, decision theory and conflict analysis is normative or prescriptive: it is concerned with identifying decisions to take, and assuming an ideal decision taker who is fully informed, able to compute with perfect accuracy, and fully rational. However, multiple researches in the last decades indicate that we realistically cannot assume that people are rational beings. Kahneman and Tversky (1979) have developed an alternative ‘descriptive’ mental accounting framework, which they call prospect theory that aims to be consistent on how people take in real-world decisions. The central principle in prospect theory and topical mental accounting is that people adapt to hedonic sensations, and therefore utilities are determined by gains and losses from a particular reference point rather than by overall wealth. In this section we

7 The three main results from prospect theory are:
1. Evaluation of decisions occur on basis of a certain reference point:
   In simple situations involving outcomes under uncertainty (lotteries) prospect theory finds, first, that people think of consequences as increments (or decrements) to current wealth, where current
will analyse how prospect theory is relevant in conflict analysis and how it can be mobilised as a tool for conflict mitigation.

1.4 Research Methodology

Conflict is a problem for traditional neoclassical economics. The problem arises from the emphasis of neoclassical economics on win-win aspects of economic exchanges and the resulting gains from trade. In recent years neoclassical economics has highlighted imperfectly specified and enforced property rights as a major source of conflicts. The methodology of our research will embrace the neoclassical agenda:

- Agents are driven by self-interest
- Agents have pre-determined and exogenous goals
- Property rights are neither fully specified nor fully enforced, which leads to a trade-off between production and appropriation activities and potential conflicts

However, our research extends beyond the traditional paradigm of conflict research in neoclassical economics by introducing two important elements: first and foremost, we introduce the possibility of imperfectly rational agents and

wealth (and other positions of status) serve only as reference points from which changes are made.

2. People are risk averse:
People tend to be more sensitive to decreases in their wealth than to increases. Kahneman and Tversky (1979) observe a ratio of just over 2:1 in several gambling experiments. For example, the experiment wherein a bet was made that would yield a 2.5:1 ratio — a 50-50 bet to win $25 or lose $10 — was rarely accepted. Those results are reflected in the value function — presented by Kahneman and Tversky — since it has a kink at the origin. The function is concave when positive and convex when negative.

3. The value function displays diminishing sensitivity:
When people associate their utility values with improvements, these values fall off with the size of the improvements. The difference in subjective value between a gain of $100 and a gain of $200 is greater than the difference between a gain of $1,100 and a gain of $1,200.
define conflict. Secondly, we try to understand why in some societies property rights are neither completely specified nor enforced. We thereby explain the imperfections in the specification and enforcement of property rights that are usually recognised as the source of conflicts.

1.4.1 The Relation between Inequality and Conflicts

In first stage, financial instability ($F$) is modelled as:

$$F_i = \alpha + \beta \hat{M}_i + \gamma A_i + \delta G_i + \nu_i$$  \hspace{1cm} (5)

Where $M$ is the military expenditure as proportion of GDP

$A$ is the arms imports as a proportion of total import

$G$ is government consumption spending as a measure of fiscal restraint

$M_i$ is instrumented as follows:

$$M_i = \phi + \phi AI_i + \nu_i \quad \text{and so} \quad \hat{M}_i = \hat{\phi} + \hat{\phi} AI_i$$  \hspace{1cm} (6)

Where $AI$ is the average intensity of conflict

Giving $F_i = \hat{\alpha} + \hat{\beta} \hat{M}_i + \hat{\gamma} A_i + \hat{\delta} G_i$  \hspace{1cm} (7)

Therefore, the probability of war can be expressed as:

$$\Pr(W) = f(\hat{F}, \hat{I}, A, IQ, H, E, N)$$  \hspace{1cm} (8)

Where $W$ is the incidence of conflict

$I$ is the average inflation
$IQ$ is the Gini Coefficient

$H$ is health expenditure as proportion of GDP

$E$ is education expenditure as proportion of GDP

$N$ is immigrants as proportion of total population.

1. Data for Inequality: one of the first and main sources of data for income inequality is a set of data collected by Paukert (1973) for 56 countries. Other sources are Chen, Datt and Ravallion (1995), Sha’ban (1990), Haddad (1990), World Development Indicators (World Bank), LIS Data Base, and World Bank Africa Department.

2. Military expenditure: the data on military expenditure for some countries will be gathered from the SIPRI military expenditure data base; other data will be taken from the United States Arms Control and Disarmament Agency (ACDA).

3. GDP: from World Development Indicators (2004 CD) and International Monetary Fund (IMF).


9. Population: from World Development Indicators (2004 CD) and IMF

10. Inflation: from World Development Indicators (2004 CD) and IMF

11. Incidence of conflicts: data will be collected from ‘Uppsala Conflict Data Project’ and KEDS Middle East Political Events Data (BCOW).

12. Measures of conflicts: there are three different intensity levels for a conflict: Minor, Intermediate, and War. For the empirical work, if the conflict is either minor or intermediate then Zero will stand for the intensity level; if the level of conflict is war, then 1 will stand for the intensity level.

The cross-sectional time series data collected from the abovementioned databases will be processed in Eviews 5. We will select countries on the basis of data availability (Algeria, Egypt, Iran, Israel, Jordan, Mauritania, Morocco, Tunisia, Turkey, and Yemen). Our aim in this study to see if there is a relationship between inequality and conflict in Middle East countries based on panel data analysis.

1.4.2 Conflict Management Procedures

CMP consists of three main phases:

- Phase 1: Elicitation and conflict analysis
  - Identifying the crucial actors and policy objectives
    - Identifying the crucial actors in the conflict
o Determining the most important objectives for the actors in the conflict
o Identifying which objectives for which actor are costly or beneficial
o Sorting the objectives in coherent categories

- Eliciting the relative importance of each policy objective for each actor
  o Comparing pair-wise the different categories for each actor in the conflict
  o Comparing pair-wise the different subsets of objectives within each category for each conflict
  o Calculating the overall relative importance of each objective for each actor in the conflict

- Eliciting the sensitivity factors
  o Eliciting the interval sensitive factor of each objective for each actor
  o Eliciting the utility sensitive factor of each objective for each actor

- Combining the AHP-procedure with the sensitivity analysis to estimate the preference step-function for all actors and objectives

- Phase II: Detecting Stable Neighbourhood positions
  - Operationalisation of reference dependent preference structure
    o Determining the one-parameter hyperbolic discount function
    o Operationalising the reference dependent preference structure
  
  - Detecting common stable neighbourhood position
    o Determining stability levels for each possible allocation bundle
    o Selecting the most common robust or stable neighbourhood position
• Phase III: The deliberation phase

We will work with a very small group (between 4 and 6 persons) to elicit in-depth data on the Arab-Israeli conflict. We believe working larger groups will slow down the process without guaranteeing better results. A better strategy might be to repeat the methodology with different small focus groups and evaluate the coherence between the different results.

We will have two groups, one representing the Arabs and the other representing the Israelis. Agents for each group will be selected from the university and will be well informed about the conflict, and each one will be considered as representing well the current interests of his/her government.

The data will be collected from two experiments. The first experiment will let us determine the objectives for each actor. The second experiment will specify which objectives are more crucial, and the sensitivity of each objective for each party, by using Saaty’s scale (see annex for more details). Here, we wish to elicit the sensitivity of each policy objective for each actor. We can expect that some objectives are more crucial than others, and that the sensitivity of most objectives differs between the parties. The procedure consists of two questions for each objective for each actor. The first question assesses how large a concession for a given policy objective may differ from its most preferred position before the actor perceives the decrease as a significant loss in utility. The second question measures what the drop in utility actually is for each objective, if a significant concession (answer question a) occurs.
When data is gathered from both experiments, MATHLAB program (version 7, release 14) will be used to run the data in order to verify the stability of all possible collaborative actions among the conflicting parties. After running the model we can determine what sort of actions in the real world endorses the detected positions, and evaluate their feasibility.

1.5 Plan of the Thesis

The chapter sequence of this thesis is as follows:

1.5.1 Chapter 2

This chapter will focus on this relatively new and rapidly expanding branch of knowledge, which will be of great value for understanding issues of conflict management and prevention, especially from the perspective of the developing world. This chapter will help us understand the sources of conflict and how to mitigate and manage conflict in developing societies.

The aim is to understand conflicts from a multidisciplinary vantage point. This will lead us to ask important questions such as: what are the constraints on and incentives for conflicts? Why in some societies do conflicts recur while other societies remain at peace? The analysis is undertaken in the context of globalisation, which has spurred the twin forces of democratisation and privatisation in developing nations.

Chapter 2 examines the source of conflicts in a context in which democratic principles and market ethos are introduced into a prototypical developing economy.
or society. For historical reasons, the society is envisaged as comprising two sectors: agricultural and industrial. Governments wield significant control over the allocation of capital across these sectors, and typically influence the terms of trade between them. The forces of democratisation instill an electoral motive for an incumbent government that determines optimal (intersectoral) terms of trade and optimal capital allocation for the government. Political equilibrium constitutes the optimal allocation of capital and the associated terms of trade. We argue that the political equilibrium is disturbed, creating economic crises and social conflicts, if there is a distribution failure: that is, that the incomes of agents in a sector are less than the minimum necessary for survival. We characterise the equilibrium distribution failure and the various sources of crises and conflicts in this prototypical society. We also explain how these conflicts can be avoided.

1.5.2 Chapter 3

In Chapter we assume that defence spending is like a public good that influences the regional economy. To be more specific, our model posits that defence spending in a regional economy offers public infrastructure that in turn influences the costs of production of local firms, which thereby influence the competitive positioning of the regional economy in the national market.

1.5.3 Chapter 4

The central hypothesis of this chapter is that conflicts are a product of continuing international chasms, splits, and differences of political and social ideology. We argue that conflicts are, to some extent, driven by international tensions, or global,
ideological, and geo-political factors. Notwithstanding global influence, local factors such as income inequality, income growth or lack of it, or political institutions, can exacerbate conflicts.

We will start our discussion with a glimpse at great global conflicts. Our main argument is that current conflicts have global roots, and so are products of what is known as international tension. In this chapter we will offer comprehensive models to capture the feedback between local factors and international tension, and which may explain various subtle inter-temporal dynamics between conflicts, violence, and terrorist activities.

We finally turn to the question of whether terrorist activities and conflicts can be endogenously-driven, offering an alternative viewpoint to the current emphasis in literature on comparative-static analyses in explaining the time-paths of conflicts and terrorist activities. We will develop a simple model of terror assets to explain the possibility of endogenous-driven cyclical paths for conflicts and terrorist activities.

1.5.4 Chapter 5

Israeli-Arab conflict is a protracted social conflict with the following characteristics: duration (protractedness) of a “high-conflict NRR” (normal relations range), fluctuations in the intensity and frequency of interaction, conflict spill over into all domains, strong equilibrating forces, and the absence of distinct termination (Azar et al 1978). The conflict has become so complicated that facile solutions are non-solutions. Despite the enduring conflict, relations do not remain at war level but fluctuate both bilaterally and regionally.
In Chapter Four we will propose a participatory conflict management procedure (CMP) that aspires to discover stable points for collaboration between confrontational parties. Stable points are mutual joint cooperative arrangements that diminish the probability of conflict re-escalation.

The data for the CMP will be gathered through two experiments. The first will be a questionnaire whose main purpose is to identify the crucial objectives for each party. The second experiment is intended to elicit the sensitivity of each policy objective for each actor. Once the data gathered, we will use MATHLAB program to determine all possible joint actions that might lead to a stable position between the two parties.

1.5.4 Chapter 6

The purpose of this section is to understand how to evaluate and measure the risk of conflict for an individual country, which is linked to international tensions (see Abolfathi, 1978 for the concept): in other words, how to measure to what extent local conflict in a country is driven by international tension/ global factors. We provide a basic theoretical analysis of a new index, what we call a beta index, of conflicts driven by international tension. The beta index is argued to capture the global roots of local conflicts. We then offer an empirical foundation to the beta index by calculating the beta values for 92 nations. We also examine the inter-temporal movement of the beta index of these 92 nations to explore how international tensions traverse over time from one region to another. In order to do that we introduce a new concept, beta mobility, that is akin to the measures of income mobility in the context of income distribution. Furthermore, we provide details of the data that we will use.
We also offer an empirical foundation to the sensitivity of the beta index of a country to its economic inequality, GDP growth, military expenditure, internationalisation index, political index, and index of openness. The model is based on three time periods: 1970–1982, 1983–1991, and 1992–2004. In this section we will use panel data that will allow us to control for unobservable time-invariant country-specific effects on the beta index of a country’s conflicts.

1.5.5 Chapter 7

Conflicts have far-reaching effects on the economies of developing countries. Chapter 7 offers a discussion on inequality and its relation to conflict. Marxist theories and theories of ethnic conflicts have stressed the relationship between economic inequality and political violence. Conflicts are one of the main concerns of any country, whatever political, social or economic situation it may be in. Conflicts are generally categorised as ‘major’ and ‘minor’ based on the level of intensity and the number of causalities.

Middle Eastern countries experienced a dramatic increase in the number of conflicts in the 1990s. In this chapter I will investigate the causes of this unprecedented change in incidence using a panel of conflict estimates for ten Middle Eastern countries for the period 1963–1999. The fixed effects model is used to control for unobservable country-specific effects that result in a missing-variable bias in cross-sectional studies. More importantly, the fixed effects model is chosen since the main goal of this study is to investigate what factors have caused substantial changes in the number of conflicts over time within countries, rather than to explain variations in conflicts across all ten countries.
1.5.5 Chapter 8

Chapter 8 is a summary of findings and conclusion.

1.6 Research Objectives

This research looks into a number of main objectives.

- Understanding the dynamics of conflicts in the Middle East.
- Identifying mutual joint cooperative arrangements that diminish the probability of conflict re-escalation in the region.
- Identifying the conflicts that would result from introducing market ethos and democratisation into established economic and social systems.
- Identifying the effect of political competition or electoral motives of democratic governments on local conflicts to ascertain if they improve or exacerbate local conflicts.
- Testing the relationship between conflict, inequality, and economic development.
- Exploring the result of increasing wage inequality on endogenous conflicts in the Middle East.
CHAPTER 2

THE ENTITLEMENT FAILURE MODEL

2.1 Introduction

Why do people get into conflict? This is a question that is neither well understood nor fully addressed by social scientists. This chapter will focus on this question, at the base of relatively new and rapidly expanding branch of knowledge, which will be of great value for understanding issues of conflict management, especially from the perspective of the developing world, and help us understand both the sources of conflict and how to mitigate and manage conflict in less developed societies.

The aim of this research is to understand conflicts from a multidisciplinary vantage point. In order to do that we will ask what are the economic incentives for and constraints on conflicts? Why in some societies do conflicts recur, while other societies retain their peaceful character? The analysis will be undertaken in the context of globalisation, which has spurred the twin forces of democratisation and privatisation in developing nations.

In recent years economics has turned its attention to the explanation of conflicts. Some interesting microeconomic models have been developed, yet there are still gaps that motivate current research. Hirshleifer (1988, 1989, 1995, and 2000) put forward models to explain conflicts in terms of three economic variables: 1) preferences, 2) opportunities within constraints, and 3) prevailing perceptions.
Hirshleifer in his work highlights a contest to explain conflict as a means to make economic gains. One of his main contributions to the field is to introduce a Tullock-type contest success function that came to be called ‘conflict technology’ in the relevant literature. In the light of conflict technology, with an economic prize from conflicts akin to that of from a contest, Hirshleifer offers an equilibrium conflict as a Nash equilibrium of the proposed contest so that conflicts are chosen as mutual best responses of micro agents.

The pioneering work of Grossman (1991, 1999) also shares the notion of conflict, but in a richer setting: Grossman reduces society to three groups: first, there is a group of peasants who decide to choose between two activities — to fight, or to produce an agricultural product. The second group represents a government agency that taxes the peasants and thereby collects a booty and raises an army to protect the booty. The third group is a rebel group which recruits and raises a rebel army from the peasants to fight the government for the booty. The rebel group funds its activities by looting peasants. Grossman posits rebellion as business, and sees this as one of the most distinguishing features of conflicts: insurgents are similar to bandits or pirates who engage in rebellion and conflicts to make profit. Thus, the new model of Grossman is more intricate than the models of Hirshman although the fundamental notion of both is that conflicts are akin to a contest for acquiring resources, as opposed to a peaceful participation in a market exchange that involves mutually beneficial trade. Conflicts are a zero-sum game — there is only one winner, who takes the whole stake.

In this way conflicts come to be seen as a product of rebellion akin to an industry that creates profit-making opportunities from an act of piracy. The rebel group has an
increasing marginal cost of recruiting fighters from the peasantry and a declining marginal benefit in terms of the increased probability of winning the contest and the prize with the increasing size of its armed force. Economic equilibrium is struck where the marginal cost of employing one more soldier is balanced by the marginal benefit of so doing.

Against the backdrop of this strand of economic theory, political scientists traditionally argue that conflicts and rebellions are actuated by political protests that are driven by deep-rooted grievances. These grievances are precipitated by a host of social factors like inequality, racial, ethnic or religious intolerances, and oppression of one group by another. The exploitation of one group by another has received serious attention from Hirshleifer (2000) who calls this proclivity of human beings to gang up on others as Machiavelli’s theorem, which can shape preferences and stir up grievances, and exaggerate the opportunities that may arise from conflict. Political science literature highlights two elements that exacerbate conflicts: first, the type of political regime has been isolated as a determinant of conflicts (see Hegre et al., 2001). There is some evidence to suggest that more democratic countries have a lower risk of war (see Collier and Hoeffler, 1998, 2002a, 2002b). Secondly, economic inequality is believed to be an important determinant of conflicts, though recent economic studies have not found any systematic relationship between inequality and conflict (see Collier and Hoeffler, 2002a, 2002b). In their studies, however, Collier and Hoeffler note low per capita income and low growth rates as contributing factors.
2.2 Twin Forces of Globalisation: Conflicts with Democratisation and the Spread of Market Ethos

Globalisation is a multidimensional issue whose various facets of economic, financial, technological and social and political processes continually transform global economy, society and polity. It is generally recognised that the process of globalisation has been significantly aided by the fall in the cost of communication and transportation and led to an inevitable shrinkage of our globe into a quasi ‘global village’, characterised by an integration typically observed in traditional village communes. One therefore views globalisation as a complex process that gradually unleashes a series of transitions: the process begins with an increased integration of world economy through trade and investment networks. It is well understood that this stage of increased integration turns on the pivot of decreasing transaction costs associated with trans-border trade and investment. Declining transactions costs are typically explained in terms of technical progress that reduces the price of communication and transport. Declining transaction costs have direct and positive impacts on cross-border trade, and on portfolio and direct investment. Another kind of transaction cost is the agency cost which generally increases with international trade. The economic consequence of increased integration is two-fold: first, nations become more interdependent in economic terms; and secondly, there arises a perception that trans-border trade and investment offer tremendous and often unprecedented economic opportunities for a nation. The first transition thus results in an increased integration of the world economy — through a mesh of multinational investment, trade flows and flows of financial capital — with an equally important transition in the perception of the importance of trans-border trade and investment as a vehicle of economic progress and prosperity for a nation. The second transition
impacts on the realm of national management, as national governments actively respond to the benefits accruing to those nations that entertain openness to foreign trade and investment. As nations compete against each other to take home the spoils of the world economy, policy makers agree that the main barrier to the acquisition of spoils lies in the domestic economic structure, characterised by the labyrinth of controls that has been a by-product of the Keynesian era of de-globalisation.

The sequence of a nation’s integration into the world economy and its development of trans-border trade and investment triggers a third transition, which paves the way for homogenisation of economic ideologies, the convergence of macroeconomic and trade policies and the consequent adoption of measures of democratisation, privatisation and liberalisation. This transition typically takes place in social and economic spheres. Whether the transition in terms of spread of market ethos and democratisation create special economic and social scenarios in developing nations that drive conflicts in these nations is the question that motivates this research.

To understand the seriousness of this question let us try to understand how conflicts seem to be banished from a democratic, market-based nation. The Smithian perspective on market competition highlights a congruence of interests of market participants: say a buyer wants some milk and is ready to give some money to the milkmaid for it, and the milkmaid wants money and is, therefore, ready to give a carton of milk in exchange. This exchange allows each to achieve a goal and thereby help each other. In a complex market mechanism, however, economic problems are often embedded in conflicting interests. The market mechanism can easily handle congruent interests, but may fail to resolve conflicts in a harmonious or fair fashion.
(see Sen, 1984). To redress such conflicts the visible hand of government is usually invoked (Ostrom, 1987).

In this work we highlight two types of conflicts, market conflicts and political conflicts, and weave them together to illuminate an important intersection between economy and polity. We consider conflict at the market level in the usual fashion as a dual economy with two distinct markets, agricultural and industrial. By applying the simple reasoning of general equilibrium, we obtain the balance between these two markets. The major departure from usual general equilibrium models is two-fold: first, we argue that governments in developing nations still exercise significant control over agricultural products to avoid food shortage crises and to influence the incomes of farmers; and second, that in developing nations governments mediate the allocation of capital between agricultural and industrial sectors. As a result, the market mechanism in developing nations is influenced by relevant public policies. Thus, the first type of conflict in our model is sectoral conflict, that is, between industrial and agricultural sectors, in the allocation of capital as well as in the determination of inter-sectoral terms of trade (relative price). This is the first facet of our model.

The introduction of public policies in the context of rural and industrial markets in our model allows us to link the second type of conflict, the political conflict, with the first type, sectorial. Since, the availability of public resources is fixed, it is modelled that there is no congruence of interest of the agents coming from these two sectors. As Hirsch (1977) notes, ‘what winners win, losers lose’. Any allocation of capital will entail political costs and benefits that a self-seeking government — driven by
electoral motive — will try to exploit. An incumbent government will naturally choose an allocation that will maximise the probability of its re-election. Our model on probabilistic voting has antecedents in the literature: Lindbeck and Weibull (1987) and Dixit and Londregan (1994) adapt the probabilistic model to examine public policies that redistribute income to narrow groups of voters. They assume that the various groups differ in their preferences for political parties and, thereby, identify the political characteristics of a group that make it an ideal candidate for receiving political largesse. These authors study the major determinants of the political success of a special interest group. In contrast, we begin with the political characteristics of voters and then apply the probabilistic voting theorem to determine the electoral equilibrium that is driven by political largesse in the form of public policies and inter-sectoral terms of trade. This is how our model resolves political conflicts.

The resolution of political conflict can have serious ramifications for the product markets due to its impact on the allocation of capital and the determination of relative prices. This is indeed a serious point to consider: traditional political theory highlights the failure of majority-rule voting caused by the absence of a stable electoral equilibrium. As a result, political instability can create significant instability in product markets. This is where we apply the probabilistic voting theorem to highlight the existence of a stable voting equilibrium, to establish that democratic political markets are well organised to promote the vote-maximising allocation of infrastructure that will, in turn, lend stability to the product markets: the model predicts that the vote-maximising government adopts an optimal allocation of capital and optimal terms of trade, which induce an electoral equilibrium that, in turn,
maximises the government’s chances of re-election. From this perspective, the economic outcome driven by agricultural and industrial markets depends on electoral equilibrium and, hence, on voters’ preferences and characteristics. In the light of the equilibrium we offer sources of conflicts and crises in such nations.

2.3 The Role of Privatisation in Globalisation: As a Vehicle of Change of Capital Ownership and Structure

Privatisation of public enterprises involves an increased trust in the efficiency of the market principle in comparison with the efficacy of the government. This ideological backdrop engendered a series of debates in the 1980s and 1990s. Despite serious questions and concerns, privatisation has been promoted with great zest in developed and developing countries alike since the 1980s. In a series of papers published in the early 2000s, the economic consequences of privatisation are considered welfare-enhancing (see Kikeri and Nellis, 2001; Shirley and Walsh, 2001 among many). However, the consequences of privatisation are mainly considered in advanced economies, and specifically in high-tech sectors like telecommunications. There is reason to believe that the economic consequences of privatisation are, at best, controversial in developing nations. From the work of Rodrik et al. (2002) and Jalilian et al. (2003) we know that the economic effects of privatisation are predicated on the quality of the regulatory regimes and governance institutions.

During the 1980s and 1990s privatisation of public enterprises was a common economic event that rocked Africa, Asia, Australia, South America and Eastern and Western Europe (Kikeri et al., 1992). Western European nations provide a nice cameo of privatisation: Great Britain and France led the major forces of privatisation
in Western Europe. In Great Britain, large and important industries such as telecommunications, gas and electricity were privatised. In France, large industrial and financial conglomerates cropped up from public enterprises. On the other hand, West Germany, Italy and Netherlands had a somewhat cavalier approach, selling public shares in industrial companies and banks (see Knauss, 1988); and no measures were taken to privatise major public utilities such as telecommunications and postal services. It was widely recognised that these utilities were inefficient, yet privatisation was pushed to the background. The governments attempted to reduce inefficiency by initiating changes in the internal organisation of these public utilities. In Austria, Belgium and Scandinavian nations, the forces of privatisation have been in low gear.

In many Eastern European countries, privatisation bids are a step towards a capitalistic economic system. Privatisation measures have also been taken in many Asian, African and South American nations, mainly to embrace a capitalistic economic system. These nations of Asia, Africa and Eastern Europe are typically characterised by absence of stock markets and experienced managerial teams, and beset with inadequate industrial organisation, lack of comprehensive legal frameworks and a lack of appropriate market institutions. Thus, the bids of privatisation in these nations are significantly different from the bids in industrial nations with well-developed capitalistic economic systems. In non-industrial nations, privatisation aims to lay down the structures of market economies, whilst in Western economies the aims of privatisation are mainly to improve the efficacy of the capitalistic economic system.
The conventional wisdom in this context is that public enterprises are heavily inefficient. There are three types of inefficiency noted in the literature. First, the cost of production in public enterprises is argued to be significantly higher than the cost of similar services provided by private enterprise. Public provision of municipal services is shown to be very costly in comparison with their private provision in the United States (see Donahue, 1998). Second, public enterprises have lower profitability relative to private firms in similar businesses (see Lopez de Silanes, 1993). Third, public firms are more inefficient in the utilisation of resources than private firms (see Mueller, 1989 and Vining and Boardman, 1993). These conclusions are supported by recent findings of the World Bank that ‘efficiency improves after privatisation’ (see Boycko et al., 1996). This leads to questions about the reason for the inefficiency of public enterprises. The explanation is that public enterprises, instead of maximising efficiency, address the needs of vote-maximising politicians (Boycko et al., 1996).

The secret behind improvement in efficiency is the change in management behaviour, caused by three factors (Bös, 1994): first, privatisation entails less government intervention, which allows flexibility in management. Second, the management of a privatised firm is more responsive to market forces due to bankruptcy threats and capital market discipline (see Kay and Thompson, 1986). Third, the management of a privatised firm has less power in influencing government policy and political favours since the ties between firm and government are snapped by privatisation. Thus, privatisation not only provides more decision-making and strategising power to the management, but also makes the firm more reliant on the market mechanism. As a result, the management — in order to survive and prosper
— must enhance the market value of the firm given the available resources. The corollary is that management will enhance efficiency in the bid to increase the market value of the firm.

However, privatisation is controversial in all societies — partly because of its political and ideological leanings and partly because of its adversarial relation with labour unions. It is true that privatisation alters the distribution of power within a society: economic decisions are transferred from the hands of policy makers and bureaucrats to private managers, whilst the management becomes responsible to shareholders rather than society or government. Socialistic models of ownership are replaced by capitalistic ones. Privatisation also impinges on the institutional aspects of labour markets. Privatisation is normally accompanied by a reduction in a trade union's power and political influence. As an example, privatisation of the electricity industry in Great Britain was a means to weaken the stranglehold of the miners’ union (see Bös, 1994, p. 3). Similar motives behind privatisation have been reported from West Germany, where the wheels of privatisation have been clogged by trade unions that exert a strong influence on political parties.

Does privatisation necessarily augment efficiency? The intended effect of privatisation on efficiency critically depends on the entry of private firms to enhance competition and reduce the monopolistic power of the privatised firm. Foreign firms, in particular, play an important role in promoting competition and encouraging technology that will lower production costs. However, foreign entry also creates problems of expatriation of profits. Foreign investors compound the problem, since an excess of foreign investment will influence strategies of privatised firms, and
these may be antithetical to national goals. In Great Britain and France, governments obviated this problem by retaining a ‘golden share’ of the privatised firm, giving them a veto power against takeovers and undesirable changes in policies. It is important to note that privatisation directly affects the budget deficits of the government. Governments lose future dividends from a privatised firm, although they can raise revenues from selling their assets. It is generally recognised that the former outweighs the latter (see Yarrow, 1986).

Privatisation may thus have an adverse effect on the government budget and, thereby, on government expenditure on infrastructure. The decline in government expenditure on infrastructure has dual effects: first, it has a recessionary impact as it lowers effective demand in the Keynesian sense. Second, a decline in the availability of infrastructure increases cost of production and, thereby, acts on the competitiveness of the entire economy. Hence privatisation is a mixed bag, and the immediate effects may be counter-productive. At the least, privatisation has political implications that may overshadow economic rationales.

In what follows we posit that privatisation is an instrument in the armoury of a government in a developing nation. By choosing the precise bid of privatisation, such governments alter the allocation of capital. Hence, we need to sub-divide developing nations into two categories: the first is the group of nations with the least developed status, where governments still tweak the allocation of capital by direct control. The second group includes those where allocation of capital takes place through the market mechanism, although governments may still have significant power in dictating the allocation of capital, acting as a gatekeeper of capital through their
choice of privatisation bids. What follows in the next section is important for both
types of nations.

We now turn to the question of the political determinants of capital allocation.

2.4 The Politics of Capital Allocation: A Baseline Model

The primary idea here is to break an economy into different sectors characterised by
regional features and allow them to produce locally and exchange with each other.
The process of exchange will give rise to flows of goods and services mediated by
intersectoral terms of trade. On the basis of this disaggregation we will search for
sectoral inequality and imbalance as sources of conflict in a traditional society. In
what follows we develop a model in terms of two sectors, although it can easily be
extended to a multi-sector economy.

2.4.1 The Basic Setting

Assume we have a dual economy that has two sectors: industry and agriculture. Thus
there is a single term of trade which we label T.O.T. The output $Y_i$ in sector $i$ is
given as the following production function, in which $L_i$ is employment and $K_i$ is
capital in sector $i$:

$$Y_i = f(L_i, K_i)$$  \hspace{1cm} (1a)

The output in each sector is shared by bargaining among claimants. In the industrial
sector the bargaining takes place between owners and workers, while in the agrarian
sector the bargaining takes place between a rural oligarchy and workers. The
individual share of output of workers in sector \( i \) is \( \vartheta_i \). Each sector thus has economic agents who also participate in politics by casting their votes. There are \( N_i \) voters in sector \( i \) and \( S_i \); a fraction of them vote for the incumbent political party. Thus \( S_i \) is the sensitivity of voters from sector \( i \), which is the exposit probability that a randomly selected voter from sector \( i \) will vote for the incumbent government. Thus, the votes in favour of an incumbent government are labelled as \( V \) and given in equation (1b):

\[
V = S_1N_1 + S_2N_2
\]  

(1b)

Voters’ sensitivities in two sectors are given as:

\[
S_1 = H(\vartheta_i), \quad S_2 = h(\vartheta)
\]  

(1c)

Note \( S_i \), the sensitivity of voters from sector \( i \), increases with the sectoral share of workers \( \vartheta_i \). We don’t assume specific functional form besides the functional form of \( S_i \) in equation (1c) at this stage. We label the T.O.T as \( p \). We offer the necessary details of these two sectors in Table 2.1.
Table 2.1: Description of the Dual Economy

<table>
<thead>
<tr>
<th>Industry (1)</th>
<th>Agriculture (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Output: $Y_i = F(K_1, N_1)$</td>
<td>Agricultural Output $Y_2 = G(K_2, N_2)$</td>
</tr>
<tr>
<td>$S_1 = H(\theta_1)$, $\frac{\partial H}{\partial \theta_1} &gt; 0$</td>
<td>$S_2 = h(\theta)$</td>
</tr>
<tr>
<td>$\frac{\partial^2 H}{\partial \theta^2} (0)$</td>
<td>$\frac{\partial h}{\partial \theta_2} (0)$, $\frac{\partial^2 h}{\partial \theta_2^2} (0)$</td>
</tr>
<tr>
<td>Share of Owner = $T_1$</td>
<td>Share of Oligarchy = $T_2$</td>
</tr>
<tr>
<td>$\theta_1 = p(Y_1 - T_1)/N_1$</td>
<td>$\theta_2 = (Y_2 - T_2)/N_2$</td>
</tr>
</tbody>
</table>

Nash Bargaining Outcome:

The bargaining takes place in each sector to maximise the so-called Nash product $n_i$:

$$n_i = \text{Nash Product} = (Y_i - T_i)^{\alpha} * T_i^{1-\alpha}$$  \hspace{1cm} \text{Industry}$$

$$n_2 = \text{Nash Product} = (Y_2 - T_2)^{\beta} * T_2^{1-\beta}$$  \hspace{1cm} \text{Agriculture}$$

where $\alpha$, $\beta$ are the bargaining powers of the industrial owner and the rural oligarchy respectively. Thus we can define $T_i$ as the following:

$$T_1 = f(\alpha, Y_1)$$  \hspace{1cm} (1d)$$

$$T_2 = f(\beta, Y_2)$$  \hspace{1cm} (1e)$$

The first order condition to maximise the Nash product is given as:

$$\frac{dn_1}{dT_1} = T_1^{1-\alpha} * \alpha (Y_1 - T_1)^{\alpha-1} * (-1) + (Y_1 - T_1)^{\alpha} * (1 - \alpha) T_1^{-\alpha} = 0$$  \hspace{1cm} (1f)$$

which gives us
\begin{align*}
T_i^{-\alpha} * (Y_i - T_i)^{\alpha - 1} [-T_i \alpha + (Y_i - T_i)(1 - \alpha)] &= 0 \quad \text{(1g)} \\
Y_i(1 - \alpha) - T_i(1 - \alpha) - T_i \alpha &= 0 \quad \text{(1h)} \\
Y_i(1 - \alpha) &= T_i(1 - \alpha + \alpha) \quad \text{(1i)}
\end{align*}

The optimal share of the owner and the oligarchy are given in (1j) and (1k)

\begin{align*}
T_1^* &= (1 - \alpha) Y_1 \quad \text{(1j)} \\
T_2^* &= (1 - \beta) Y_2 \quad \text{(1k)}
\end{align*}

The per capita tax in sector \( i \) is given as

\begin{align*}
t_i^* &= \frac{T_i^*}{N_i} = (1 - \alpha) \frac{p Y_i}{N_1} = (1 - \alpha) p y_2 \quad \text{(1l)} \\
t_2^* &= (1 - \beta) \frac{Y_2}{N_2} = (1 - \beta) y_2 \quad \text{(1m)}
\end{align*}

Define \( y_1 \) as the per capita income in industry and \( y_2 \) as the per capita income in agriculture.

The per capita share of workers in sector \( i \) is given as

\begin{align*}
\vartheta_i &= p (Y_i - T_i^*) / N_i \quad \text{(1n)} \\
\text{Or,} \\
\vartheta_i &= p (Y_i - Y_i + \alpha Y_i) / N_i \quad \text{(1o)} \\
\vartheta_i &= \alpha (p Y_i) / N_1 \quad \text{(1p)} \\
\vartheta_2 &= \beta Y_2 / N_2 \quad \text{(1q)}
\end{align*}

We know the per capita income in each sector is given as
\[ Y_1/N_1 = y_1 \]  
\[ Y_2/N_2 = y_2 \]  

So the individual labour share in each sector is reduced to

\[ \vartheta_1 = p \alpha y_1 \]  
\[ \vartheta_2 = \beta y_2 \]  

The voter sensitivity in each sector is given as

\[ S_1 = H(\vartheta_1) = H(p \alpha y_1) \]  
\[ S_2 = h(\vartheta_2) = h(\beta y_2) \]  

The political characteristics are given as the overall voter sensitivity \( v \)

\[ v = \frac{V}{N_1 + N_2} = H(p \alpha y_1) \frac{N_1}{N_1 + N_2} + h(\beta y_2) \frac{N_2}{N_1 + N_2} \]  
\[ n_1 = \frac{N_1}{N_1 + N_2} \]  
\[ n_2 = \frac{N_2}{N_1 + N_2} = 1 - n_1 \]

### 2.4.2 Vote Maximisation and Electoral Motives of the Incumbent Government

The basic motive of an incumbent government is to maximise votes, which is not necessarily the same as maximisation of the probability of re-election. This is the fundamental assumption about the electoral motive of an incumbent government in
our model. Thus, the function that is of relevance to an incumbent is equation (2a) is 
the vote function:

\[
V = H(p\alpha y_1)n_1 + h(\beta y_2)n_2
\]  
(2a)

In our model the incumbent government maximises votes \( V \) by choosing the T.O.T, \( p \), and the allocation of available capital between sectors \( K_1 \) and \( K_2 \), while \( p \), \( K_1 \) and \( K_2 \) determine \( Y_1 \) and \( Y_2 \) where from the shares of worker-voters are determined. The goal of the government is to maximise votes subject to the constraints laid down in the previous section.

**Optimisation Problem of the Incumbent Government:**

The incumbent government seeks to maximise the following

\[
\text{Maximise}\{V = H(p\alpha y_1)n_1 + h(\beta y_2)n_2 \Sigma p, K_1, K_2\} 
\]  
(2b)

\{\text{\{K}_1, \text{K}_2\}\}

Subject to

\[Y_1 = F(L_1, K_1)\]  
(2c)

\[Y_2 = G(L_2, K_2)\]  
(2d)

\[K_1 + K_2 = \overline{K}\]  
(2e)

Hence, we can reduce the capital allocation to the following simple rule

\[
\frac{K_1}{\overline{K}} + \frac{K_2}{\overline{K}} = 1
\]  
(2f)

\[k_1 + k_2 = 1\]  
(2g)

\[k_1 = 1 - k_2 = k\]  
(2h)
Thus the choice of capital allocation for the incumbent government is reduced to the choice of \( k \).

### 2.4.3 Optimal Choice of Capital Allocation and Distribution Failure

The foundation of our model is built on the idea that the choice of capital allocation is dependent on the political calculations of the incumbent government, which is driven mainly by instincts for political survival. The allocation of capital leads to the creation of sectoral supplies and incomes and corresponding sectoral demands, wherefrom the equilibrium terms of trade \( p \) arises. Our central question is whether the choice of an optimal allocation of capital, on the basis of political calculations, can cause an *distribution failure* for the poor that drives them to starvation and consequent violent conflict. The first order condition for maximisation is given as (3a):

\[
\frac{\partial \nu}{\partial k} = \frac{\partial H}{\partial y_1} \frac{\partial Y_1}{\partial k} \frac{1}{N_1} + \frac{\partial h}{\partial y_2} \frac{\partial Y_2}{\partial k} \frac{1}{N_2} = 0
\] (3a)

From equation (3a) we know

\[
\frac{p \frac{\partial H}{\partial y_1}}{\frac{\partial Y_1}{\partial k}} \frac{1}{N_1} = \frac{\frac{\partial h}{\partial y_2}}{\frac{\partial Y_2}{\partial k}} \frac{1}{N_2}
\] (3b)

Wherefrom we can derive the shares of workers in each sector as implicit functions of \( p, y \) and \( k \):

\[
u_1^* = p \cdot \alpha \cdot y_1^*(k^*)
\] (3c)
\[ \vartheta^*_2 = \beta \cdot y^*_2(k^*) \] (3d)

A distribution-failure arises if the vote-maximising choices lead to individual income shares of workers in either sector that are smaller than a critical minimum that is necessary for survival. That is:

\[ \vartheta^*_i < \overline{\vartheta} \] (3f)

Note that \( \overline{\vartheta} \) is the critical value of \( \vartheta \) below which workers will starve due to a distribution failure; consequent social problems will arise that will gradually push the sector towards violence. As an example, if \( \vartheta^*_1 < \overline{\vartheta} \) then the industrial sector may encounter conflict as workers’ incomes are less than the critical minimal necessary for survival. What is important is that the survival problem can be expressed in terms of an allocation of capital problem: there is a Maximum, or upper-bound, of \( k \), Max \( k^* \) beyond which the agricultural sector will suffer violent conflict as the allocated capital is too little to give workers a minimum income. In a similar vein, there is a minimum \( k \), Min \( k^* \), such that the allocation of capital below Min \( k^* \) will drive the industrial sector into strife as workers’ shares falls below the critical minimum. It is possible for conflicts in one sector to move to the other sector.
The condition for the nonexistence of a safe zone is given by $Min.k^* > Max.k^*$

What is interesting in this two-sectoral model is that whether the capital allocation $k^*$ is safe or otherwise will be reflected in the inter-sectoral price ratio, TOT $p$. Thus, there will be a crisis if the TOT $p$ exceeds a critical value as given in the following:

$$p > \frac{\beta \vartheta_1^*}{\alpha \vartheta_2^*} \frac{Y_2^*}{Y_1^*}$$  \hspace{1cm} (3g)

The important question now is what determines the intersectoral terms of trade $p$? We turn to this in the following subsection.
2.4.4 Determination of the Intersectoral Term of Trade (T.O.T)

The finding of the model calls forth a seemingly easy question of the determinants of the TOT, p. In other words: what determines p? The answers are not simple since the agricultural TOT is influenced by a host of market and extra-market factors like demand and supply, price controls, price subsidies, procurement prices, input subsidies and so on. It is in fact a Pandora’s box that we seek to take quick look in. Some possibilities are outlined below as starting points for analysis:

- One possible means of determining p is in terms of a bargaining game between industrialists and the agro-oligarchy. Relative bargaining power will determine p and explain whether the critical value of p is crossed, unleashing a series of sectoral conflicts.

- p can be determined for the equality of demand and supply in the industrial sector given the balance between demand and supply in the agricultural sector. Thus, one may like to hold the price of agricultural commodity as a datum (administered price) and determine p by equating the demand and supply in the industrial sector. In this case it is important to understand how we can endogenously derive excess demand function to determine p.

In what follows we examine the demand and supply mechanism to determine the TOT p.
2.4.4.1 Demand for Industrial Goods

Assuming a fixed proportion of income $\alpha_i$ of $Y_i$ is spent on industrial goods, we can write the demand for industrial goods as:

$$D_i = \alpha_1 * Y_1 + \alpha_2 * Y_2 \quad (4a)$$

One can make $\alpha_i$ sensitive to the price ratio $p$:

$$\alpha_1 = (\alpha_o - \alpha_1 p) \quad (4b)$$

$$\alpha_2 = \bar{\alpha}_o - \alpha_2 p \quad (4c)$$

Hence the demand for the industrial goods is reduced to

$$D_i = (\alpha_o - \alpha_1 p)Y_1 p + (\bar{\alpha}_o - \alpha_2 p)Y_2 \quad (4d)$$

Or,

$$D_i = p(\alpha_o - \alpha_1 p)F(K_1, N_1) + (\bar{\alpha}_o - \alpha_2 p)G(K_2, N_2) \quad (4e)$$

Or,

$$D_i = p(\alpha_o - \alpha_1 p)N_1 F\left(\frac{K_1}{N_1}, 1\right) + (\bar{\alpha}_o - \alpha_2 p)N_2 G\left(\frac{K_2}{N_2}, 1\right) \quad (4f)$$

In order to make calculations in terms of $k$, we make a simplification:

$$\bar{K} = K_1 + K_2 = N_1 \quad (4f')$$

As a result, we can write:

$$\frac{K_1}{N_1} = k^*, \quad \frac{K_2}{N_2} = 1 - k^* \quad (4g)$$
After substituting (4f') and (4g) into equation (4f) we arrive at the demand for the industrial good as:

\[
D_i = p(\alpha_o - \alpha_s p)N_1F(k^*) + N_2(\tilde{\alpha}_o - \alpha_s p)G(1-k^*)
\]  

(4g')

2.4.4.2 Supply of industrial goods

From the postulated production function we know

\[
S_i = Y_i = F(K_1,N_1) = N_1 * F\left(\frac{K_1}{N_1},1\right) = N_1 * F(k^*,1)
\]  

(4h)

We express the excess demand function as

\[
X_D = D_I - S_I
\]  

(4i)

Hence,

\[
X_D = p(\alpha_o - \alpha_s p)N_1F(k^*) + N_2(\tilde{\alpha}_o - \alpha_s p)G(1-k^*) - N_1F(k^*,1)
\]  

(4j)

Or,

\[
X_D = F(k^*)N_1[p(\alpha_o - \alpha_s p) - 1] + (N_2 \tilde{\alpha}_o - N_2 \alpha_s p)G(1-k^*)
\]  

(4k)

Further simplifications yield the following:

\[
X_D = F(k^*)N_1[p \alpha_o - p^2 \alpha_1 - 1] + N_2 \tilde{\alpha}_o G(1-k^*) - N_2 \alpha_s p G(1-k^*)
\]

......  

(4l)

Or,

\[
X_D = F(k^*)N_1 \alpha_o p - \alpha_s F(k^*)N_1p^2 - F(k^*)N_1 + N_2 \tilde{\alpha}_o G(1-k^*)N_2 \alpha_s p G(1-k^*)
\]

......  

(4m)

Hence
\[ X_D = [F(k^*)N_i\alpha_i - G(1-k^*)N_i\alpha_i^2]p - \alpha_i F_i(k^*)N_i p^2 + N_2\alpha_i G(1-k^*) - F(k^*)N_i \] 

...... (4n)

Equation (4n) can be reduced to a simple quadratic equation

\[ X_D = A_1 p - A_2 p^2 + A_3 \] 

(4o)

The excess demand function is a quadratic function of the TOT \( p \) and the slope of the excess demand function is equal to

\[ \frac{dX_D}{dp} = A_1 - 2A_2 p \] 

(4p)

The excess demand function and its slope will play an important role in the determination of an equilibrium TOT \( p \) and its stability properties as highlighted in the following subsection.

**2.4.5 The Existence and Stability of Equilibrium Terms of Trade**

The existence and stability of an equilibrium TOT \( p \) requires the excess demand function to be a continuous and inverse function of \( p \) which is true if \( p < A_1 / 2A_2 \) and that will give \( \frac{dX_D}{dp} < 0 \). Since there are two goods in the system, from Walras’ law we know that if one market is in equilibrium the other market will also be in equilibrium. Hence for the existence of an equilibrium TOT we need the following single condition to be met:

\[ X_D = A_1 p - A_2 p^2 + A_3 = 0 \] 

(4o’)
The above equilibrium condition as a quadratic equation gives us two roots $p^*$:

$$p^* = \frac{-A_1 \pm \sqrt{A_1^2 + 4A_2A_3}}{-2A_2}$$  \hspace{1cm} (5a)$$

Or,

$$p^* = \frac{A_1}{2A_2} \pm \frac{\sqrt{A_1^2 + 4A_2A_3}}{2A_2}$$  \hspace{1cm} (5b)$$

Note that from the stability condition we know that only the smaller root is stable; hence, the stable equilibrium TOT is given by $p^*$:

$$p^* = \frac{A_1}{2A_2} - \frac{\sqrt{A_1^2 + 4A_2A_3}}{2A_2} = \mu(k^*)$$  \hspace{1cm} (5c)$$

Now we try to predict how the equilibrium $p^*$ will respond to changes in $p^*$ as an exercise in comparative static. It is a huge problem, since the functional forms are too complex to yield a readymade answer. So we adopt the following steps to provide an answer to this question:

- **Step 1:**

  We first look the first term of the equilibrium price $p^*$:

  $$\frac{A_1}{2A_2} = \frac{\nu(k^*)\alpha_1 - \sigma(1 - k^*)\alpha_2}{\alpha_1F_1(k^*)\alpha(N_1)}$$  \hspace{1cm} (5d)$$

  This can be reduced to:
\[
\frac{A_1}{2A_2} = \frac{\alpha_o}{\alpha_1} - \left[ \frac{G(1-k^*)N_2 \alpha_2}{F_1(k^*)N_1 \alpha_1} \right]
\]  

(5e)

Differentiating (5e) with respect to \(k\) gives

\[
\frac{d}{dk^*} \left( \frac{A_1}{2A_2} \right) = -\left[ \ldots + G'N_2 \alpha_2 - [\ldots]F_1(k^*)N_1 \alpha_1 \right] \frac{\alpha_1}{F_1(k^*)N_1 \alpha_1} < 0
\]  

(5f)

• **Step 2:**

Let us call \(T = \frac{A_1^2 + 4A_2A_3}{4A_2^2} = \left( \frac{A_1}{2A_2} \right)^2 + \frac{A_3}{A_2^2} \)  

(5g)

Differentiating (5g) with respect to \(k\) yields:

\[
\frac{d}{dk^*} (T) = 2* \frac{A_1}{2A_2} \left[ \frac{d}{dk^*} \left( \frac{A_1}{2A_2} \right) \right] + A_3 * \frac{d}{dk^*} \left( \frac{1}{A_2^2} \right)
\]  

(5h)

Note the following:

\[
\frac{d}{dk^*} \left( \frac{1}{A_2^2} \right) = -\frac{2A_2 \left( \frac{dA_2}{dk^*} \right)}{A_2^4}
\]  

(5i)

\[
\frac{d}{dk^*} \left( \frac{1}{A_2^2} \right) = -\frac{dA_2}{dk^*} \frac{1}{A_2^3}
\]  

(5j)

Note that: \( \frac{dA_2}{dk^*} = \alpha_1 N_1 F_1'(k^*) > 0 \)  

(5k)

The most likely case is that as \(k^*\) increases, the \(p^*\) will decline as the impact on supply will be stronger than the demand.
That is, it is expected that \( \frac{dp^*}{dk^*} < 0 \). However, there is no guarantee that this will be the case, for which we will offer restrictions in the next subsection to yield this result. However, if \( \frac{dp^*}{dk^*} < 0 \), the vote-maximisation by an incumbent government will require:

\[
V = H \left( p^*, \alpha, Y_1 \right) N_1 + h(\beta Y_2) N_2
\]

(5i)

\[
p^* = \mu(k^*), \quad Y_1 = F(k^*), \quad Y_2 = G\left(1 - k^*\right)
\]

(5j)

\[
V = H \left[ \mu(k^*), F(k^*) \right] N_1 + h[\beta, G\left(1 - k^*\right)] N_2
\]

(5m)

\[
\frac{\partial V}{\partial k^*} = N_1 \left( \frac{\partial H}{\partial k^*} \frac{\partial \mu}{\partial k^*} + \frac{\partial H}{\partial k^*} \frac{\partial F}{\partial k^*} \right) - N_2 \beta, h^* G^* = 0
\]

(5n)

\[
N_1 \left( H^* \mu^* + H^* F^* \right) - N_2 \beta, h^* G^* = 0
\]

(5o)

Since our result is based on an assumption that it is very likely that \( \frac{dp^*}{dk^*} < 0 \), in what follows in the next subsection we offer a set of conditions that can ensure this inverse relationship between \( p^* \) and \( k^* \).

### 2.4.6 An Alternative Formulation of Terms of Trade \( p \)

We can also make an alternative model. The demand for industrial goods is

\[
D_I = p \cdot \alpha, Y_1 + \tilde{\alpha}, Y_2
\]

(6a)
Let us assume that \( \alpha_i = \text{Constant}, \) but the

\[
\alpha_2 = \alpha_o - \alpha_2 p \tag{6a'}
\]

Thus, the income effect and price effect cancel each other out in the industrial sector while the demand function for the industrial goods is assumed to be inversely associated with the TOT in the agricultural sector. This is the most likely demand function, given as:

\[
D_i = pY_i\alpha_1 + (\alpha_o - p\alpha_2)Y_2 \tag{6b}
\]

Or,

\[
D_i = p\alpha_1.F(K_1, N_1) + (\alpha_o - p\alpha_2)G(K_2, N_2) \tag{6c}
\]

Or,

\[
D_i = p\alpha_1.N_1.F(k^*) + (\alpha_o - p\alpha_2)N_2.G(1-k^*) \tag{6d}
\]

The supply function for the industrial goods is given as:

\[
S_i = Y_1 = N_1.F(k^*) \tag{6e}
\]

The excess demand function is given as:

\[
X_D = D_i - S_i \tag{6f}
\]

Or,

\[
X_D = p\alpha_1.N_1.F(k^*) - N_1.F(k^*) + (\alpha_o - p\alpha_2)N_2.G(1-k^*) \tag{6g}
\]

Or,

\[
X_D = N_1.F(k^*)(p\alpha_1 - 1) + (\alpha_o - p\alpha_2)N_2.G(1-k^*) \tag{6h}
\]

Once again, by appealing to Walras’ law, the equilibrium in the system is given by the market clearing for one market only. That is:
which gives rise to:

\[ N_1.F(k^+)|\alpha_i|p - N_1.F(k^+) + \alpha_2.N_2.G(1-k^+) - \alpha_2.N_2.G(1-k^+)\] = 0  \hspace{1cm} (6i)

Or,  \[\frac{N_1.F(k^+)|\alpha_i| - \alpha_2.N_2.G(1-k^+)}{p} = \frac{\alpha_2.N_2.G(1-k^+)}{N_1.F(k^+)|\alpha_i| - \alpha_2.N_2.G(1-k^+)}\]  \hspace{1cm} (6j)

The equilibrium condition (6j) gives us the equilibrium TOT \( p^e \) as:

\[ p^e = \frac{\alpha_2.N_2.G(1-k^+)}{N_1.F(k^+)|\alpha_i| - \alpha_2.N_2.G(1-k^+)} \]  \hspace{1cm} (6k)

Is there something that automatically makes the equilibrium TOT meaningful? Unfortunately, there is nothing sacrosanct about \( p^e > 0 \). If \( p^e < 0 \), the model breaks down. In order to prevent the collapse of the model, we require some parametric restrictions. In what follows we take a special case to drive our point home.

Let us assume \( \alpha_2 = 0 \) so that we can see how parametric restrictions can ensure a meaningful equilibrium price. For \( \alpha_2 = 0 \), we will have a special value of \( p^e \) as \( p^{\alpha_2} \):

\[ p^{\alpha_2} = \frac{\alpha_2.N_2.G(1-k^+)}{\alpha_1.N_1.F(k^+)} \cdot \frac{1}{\alpha_1} \]  \hspace{1cm} (6l)

For \( p^{\alpha_2} > 0 \) the following must hold:
\[
\frac{\alpha_o N_2 G(1 - k^*)}{\alpha_i N_1 F(k^*)} > \frac{1}{\alpha_i} \quad (6m)
\]
\[
\frac{\alpha_o N_2 G(1 - k^*)}{N_1 F(k^*)} > 1 \quad (6n)
\]
\[
G(1 - k^*) > \frac{N_1}{N_2} \cdot \frac{F(k^*)}{\alpha_o} \quad (6o)
\]

The above conditions are necessary for making the equilibrium price \( p^{ee} \) economically meaningful.

2.4.7 The New Model of Terms of Trade and Electoral Motive

Note that vote-maximisation calls forth:

\[
\frac{\partial V}{\partial k} = \frac{\partial H}{\partial Y_1} \frac{1}{n_1} + \frac{\partial H}{\partial p} \frac{1}{\partial k} + \frac{\partial h}{\partial Y_2} \frac{1}{\partial k} = 0
\]

\( (6p) \)

Note \( \frac{\partial H}{\partial p} > 0, \quad \frac{\partial H}{\partial Y_1} > 0 \) \( (6p') \)

Since \( \frac{\partial p^e}{\partial k} = -\alpha_i N_1 F(k^*) G - \alpha_o N_2 G(1 - k^*) \left[ \ldots \right] < 0 \), there exists an interior value of \( k \) that maximises votes.

Let us use a specific example here to take stock of our findings.

2.4.7.1 An Example

Let us assume

\[ y_1^* = F(k_1^*) = \mu k_1^*, \quad y_2^* = G(k_2^*) = \lambda k_2^* \]

\( (6p') \)
We know \( k_1^* = k^* \), \( k_2^* = 1 - k^* \) and from these functions we can derive the critical value of TOT as \( p^c \) such that for \( p > p^c \) there will be a potential conflict and an ensuing crisis for the system.

Thus there is a potential conflict and a crisis if:

\[
p > p \frac{\beta_1 \vartheta_1^* \lambda y_2^*/\lambda}{\alpha \vartheta_2^* y_1^*/\mu} = p^c \tag{6r}
\]

Or, if:

\[
p > \frac{\beta \vartheta_1^* \mu y_2^*/\mu}{\alpha \lambda \vartheta_2^* y_1^*/\mu} \tag{6s}
\]

That is:

\[
p > \frac{\beta_1 \vartheta_1^*}{\alpha \vartheta_2^*} \frac{k_2^*}{k_1^*} \tag{6t}
\]

That can be further reduced to:

\[
p > \frac{\beta_1 \vartheta_1^*}{\beta \vartheta_2^*} \left( 1 - \frac{k^*}{k} \right) \tag{6u}
\]

For us the critical price ratio is \( p^c \) that is given as:

\[
p^c = \frac{1-k^*}{k^*} \frac{\beta_1 \vartheta_1^*}{\alpha \vartheta_2^*} \tag{6v}
\]

Note that if \( p > p^c \) at least one sector of our postulated economy will experience problems that can lead to violent conflict, as there is an distribution failure for
workers in at least one sector. On the other hand, if \( p < p^* \), everything is fine — the market mechanism works well and there is no distribution failure in either sector.

### 2.4.7.2 Determination of an Equilibrium TOT \( p \)

We know that the excess demand for the industrial good is given as:

\[
X_D = \left[ \mu N_1 \alpha_o - \lambda (1 - k^*) N_2 \alpha_2 \right] p - \alpha_2 \mu k^* N_1 p^2 + N_2 \alpha_o \lambda (1 - h^*) - \mu h^* N_1 \\
\ldots \ldots \quad (6w)
\]

That can be expressed as:

\[
X_D = A_1 p - A_2 p^2 + A_3 \\
(6x)
\]

Where the coefficients are given as:

\[
A_1 = N_2 \alpha_o \mu k^* - \lambda N_2 \alpha_2 + \lambda N_2 \alpha_2 \\
(6y)
\]

\[
A_1 = A_{11} k^* - A_{12} \\
(6z)
\]

\[
A_2 = N_1 \alpha_1 \mu k^* = A_{21} k^* \\
(6aa)
\]

\[
A_3 = N_2 \alpha_o \lambda - N_2 \alpha_o k^* - \mu N_1 k^* \\
(6ab)
\]

\[
A_3 = N_2 \alpha_o \lambda - k^* (N_2 \alpha_o + \mu N_1) \\
(6ac)
\]

\[
A_3 = A_{31} - A_{32} k^* \\
(6ad)
\]

It is possible to express the excess demand function \( X_D = A_1 p - A_2 p^2 + A_3 \) in terms of \( k^* \) and \( p \) as:

\[
X_D = (A_1 k^* - A_{12}) p - A_{21} k^* p^2 + A_{31} k^* - A_{32} k^* \\
(6af)
\]
or, \[ X_D = A_{11} k^* p - A_{12} p - A_{21} k^* p^2 + A_{31} - A_{32} k^* \] (6ag)

Hence, \[ X_D = k^* [A_{11} p - A_{21} p^2 - A_{32}] + A_{31} - A_{12} p \] (6ah)

In order to determine the derivative of the excess demand function with respect to \( p \) we differentiate it to yield:

\[
\frac{\partial X_D}{\partial p} = k^* [A_{11} - 2A_{21} p] - A_{12}
\] (6ai)

The existence of an equilibrium and its stability are guaranteed if

\[
\frac{\partial X_D}{\partial p} < 0 \text{ if } k^* [A_{11} - 2A_{21} p] - A_{12} < 0
\] (6aj)

that is, \[ A_{11} - 2A_{21} p < \frac{A_{12}}{k^*} \] (6ak)

or, \[ A_{11} - \frac{A_{12}}{k^*} < 2A_{21} p \] (6al)

\[
p > \frac{A_{11}}{2A_{21}} - \frac{A_{12} k^*}{2A_{21}} \frac{1}{k^*}
\] (6am)

The existence of the equilibrium TOT and its stability are explained in Figure 2.2:
Note that $X_D$ is downward-sloping near the equilibrium $p$ and there is a unique intersection between $X_D$ and $p$ axis and hence a single equilibrium $p$ which is stable since the forces of excess demand and supply send it back to $p^e$ if there is any displacement of $p$ from $p^e$.

2.4.8 Associated Dynamics of the Equilibrium Path: Electoral Motive, Optimal Allocation of Capital and the Time-Path of Terms of Trade

We know the vote-maximising $k^*$ is given by:

$$p \frac{\partial H}{\partial Y_1} \frac{\partial Y_1}{\partial k} \frac{1}{N_1} + \frac{\partial h}{\partial Y_2} \frac{\partial Y_2}{\partial k} \frac{1}{N_2}$$

(7a)

And we also know:
\[
\frac{\partial Y_1}{\partial k} = \mu \quad \frac{\partial Y_2}{\partial k} = -\lambda \tag{7b}
\]

Similarly, as we postulate:

\[
S_1 = \frac{1}{2} Y_1^2 \quad S_2 = \frac{1}{2} Y_2^2 \tag{7c}
\]

The sensitivity of voters in each sector is given by:

\[
\frac{\partial S_1}{\partial Y_1} = y_1 \quad \frac{\partial S_2}{\partial Y_2} = y_2 \tag{7d}
\]

The first order condition gives us:

\[
p.y_1.\mu . \frac{1}{N_1} = y_2.\lambda . \frac{1}{N_2} \tag{7e}
\]

or,

\[
\frac{y_1}{y_2} = \frac{N_1 \lambda}{N_2 \mu} \tag{7f}
\]

that can be further reduced to

\[
\frac{p.\mu . k^*}{\lambda (1-k^*)} = \frac{N_1 \lambda}{N_2 \mu} \tag{7g}
\]

or,

\[
p.\mu^2 . N_2 . k^* = N_1 . \lambda^2 - N_1 . \lambda^2 . k^* \tag{7h}
\]

From (7h) we derive the vote-maximising allocation of capital as

\[
k^* = \frac{N_1.\lambda^2}{p.\mu^2 . N_2 + N_1.\lambda^2} \tag{7i}
\]
Note the following comparative static properties of $k^*$:

$$\frac{\partial k^*}{\partial p} < 0 \quad \frac{\partial k^*}{\partial N_2 \mu} < 0 \quad \frac{\partial k^*}{\partial N_1 \lambda} > 0$$  \hspace{1cm} (7j)

### 2.4.8.1 Excess Demand Function

We have derived the excess demand function as:

$$X_D = \frac{N_1 \lambda^2}{N_1 \lambda^2 + pN_2 \mu^2} \left[ \ldots \right] + A_{31} - A_{12}p$$  \hspace{1cm} (7k)

that is,

$$X_D = \frac{N_1 \lambda^2 \left[ \ldots \right] + A_{31} \left[ N_1 \lambda^2 + N_2 \mu^2 p \right] - A_{12} \left[ N_1 \lambda^2 p + N_2 \mu^2 p^2 \right]}{N_1 \lambda^2 + pN_2 \mu^2}$$  \hspace{1cm} (7l)

### 2.4.8.2 Simple Definition of Equilibrium and Disequilibrium Adjustment

Our simple definition of instantaneous equilibrium requires $X_D = 0$, which gives rise to the following equilibrium condition:

$$N_1 \lambda^2 \left[ A_{11}p - A_{31}p^2 - A_{12} \right] + A_{31}N_1 \lambda^2 + A_{31}N_2 \mu^2 p - A_{12}N_1 \lambda^2 p - A_{12}N_2 \mu^2 p^2 = 0$$  \hspace{1cm} (7m)

that is,

$$a_1p - a_2p^2 + a_3 = 0$$  \hspace{1cm} (7n)

The disequilibrium adjustment is a chimical tatonnement process for which we need to express the non-zero excess demand as the following:
2.4.8.3 The Walrasian Tatonnement and the Time Path of Terms of Trade

Note that the time-path of $p$ is given by an adjustment in price in real time that is linked to the excess demand $\tau$ as the rate of adjustment:

$$p_{t+1} = \tau X_D$$

(7p)

$$p_{t+1} = \frac{a_1 \cdot p_t - a_2 \cdot p_t^2 + a_3}{m + n \cdot p_t} \cdot \tau$$

(7q)

For the sake of simplification we set $\tau=1$, which gives us:

$$m \cdot p_{t+1} + n \cdot p_t \cdot p_{t+1} = a_1 \cdot p_t - a_2 \cdot p_t^2 + a_3$$

(7r)

2.4.8.4 The Relevant Fixed Point of the Proposed Time-Path:

The fixed point of the time path is defined as:

$$p_{t+1} = p_t = p^*$$

(7s)

that is,

$$m \cdot p^* + n \cdot p^{*2} = a_1 \cdot p^* - a_2 \cdot p^{*2} + a_3$$

(7t)

$$(a_1 - m)p^* - (a_2 + n)p^{*2} + a_3 = 0$$

(7u)

$$p^*_{1,2} = \frac{(a_1 - m) \pm \sqrt{(a_1 - m)^2 + 4a_3(a_2 + n)}}{2(a_2 + n)}$$

(7v)
The time path therefore is:

\[ p_{t+1}(m+n.p_t) = a_1p_t - a_2p_t^2 + a_3 \]  

(7w)

Roughly:

\[ p_{t+1}(m+n.p_t) = B_t p_t (L - p_t) \]  

(7x)

\[ p_{t+1} = \left( \frac{B_i}{m+n.p_t} \right) * p_t (L - p_t) \]  

(7y)

2.4.9 The Chaotic Regime: Simple Model with Complex Dynamics

The time-path is beset with chaotic dynamics if the following condition holds:

\[ M^* = \frac{B_i}{m+n.p_t} > 3.73 \]  

(8a)

\[ B_i > 3.73(m+n.p_t) \]  

(8b)

\[ p_t < \frac{1}{n} \left( \frac{B_i}{3.73} - m \right) \]  

(8c)

Both these equilibria \( p_1^* \) and \( p_2^* \) are the steady state of the above price dynamics. It is instructive to see that the larger equilibrium relative price \( p_2^* \) is stable. The lower equilibrium price \( p_1^* \) is always unstable. Also note that \( p_1^* \) is stable if

\[ p_t < \frac{1}{n} \left( \frac{B_i}{3.73} - m \right) \]  

(8d)

It is now possible to characterise the dynamics: for \( 1 < M^* < 3 \) the dynamics of relative price converge to the stable equilibrium \( p_1^* \). This is the region of stability.
that plays an important role in equilibrium analysis as discussed in Gangopadhyay (2005, 2007). If due to parametric shifts $M^*$ is increased above 3, $p_1^*$ becomes unstable and the relative price converges to a stable 2-period cycle. As $M^*$ is increased further the stable period cycles of n bifurcate into cycles of period 2n. From Feigenbaum (1978) we know that the range of $M^*$ values for which the nth cycle is stable shrinks at a geometric rate. For $M^* > 3.57$ the relative price evolves through a cycle of infinite period. The relative price is within the relevant bounds but never repeats. For a higher order the relative price may look like a random process, but it is fully deterministic (see May, 1976).

### 2.4.10 Summary

We find that the introduction of market ethos and democratisation in developing nations can create a fragile economic and social system. We show the existence of a political equilibrium that maximises the probability of re-election of an incumbent government. This is an electoral equilibrium. In the equilibrium, we derive the optimal allocation of capital as well as the optimal value of inter-sectoral terms of trade between agriculture and industry. The central issue is whether the political equilibrium is economically meaningful. We articulated two sets of conditions for it: first and foremost, the political equilibrium must ensure a minimal distribution for both industrial and agricultural agents. Otherwise, there will ensue a distribution failure and survival problems for economic agents that will, in turn, drive conflicts in such societies. Secondly, the political equilibrium and the consequent economic outcome must be stable so that small changes do not threaten a distribution failure.
The findings are of great importance: we have demonstrated the existence of a region of capital allocation such that if the optimal allocation of capital lies within this specific region there does not arise any distribution failure. Allocation of capital within this safe region renders the system crisis-free and there is no economic source of conflict. If the capital allocation is not contained within this safe region, economic crises, distribution failures and conflicts characterise the outcome either in agriculture or in industry. In addition, we have established that under a specific and reasonable condition, the postulated economic and political system will fail to engender the safe region. As a result, there will be crises, distribution failures and conflicts in agriculture or industry or both, depending on the allocation of capital between these sectors. We also found that the dynamics of the political equilibrium can create enormous instability and fragility, such that chaotic regimes are characteristic of the expected economic and social outcome.
3.1 Politics of Allocation of Defence Spending in a Bi-sectoral Model

3.1.1 Introduction

In this section we assume that defence spending is like a public good that influences the regional economy. To be more specific, our model posits that defence spending in a regional economy offers public infrastructure that in turn influences the costs of production of local firms, which thereby influence the competitive positioning of the regional economy in the national market.

Thus, in terms of bare essentials, our model is similar to the strategic trade and investment models. These have attracted serious criticisms on two grounds: that their conclusions are extremely sensitive to assumptions about the mode/nature of competition and that the optimal rent-seeking policy loses much of its gloss once we consider the political costs associated with the policy (Dixit and Grossman, 1986, p. 234). An important step towards a better understanding of this issue requires us to endogenise the mode of competition and also to explicitly introduce government policy making in this context. Our proposed work makes both the nature of competition and government policy making endogenous, and thereby provides a framework in which defence spending, the conduct of firms and political decisions are endogenously determined. Our model is therefore an enhancement of the existing models of strategic investment and trade.
Our central concern is to address two critical issues of government involvement in the context of strategic investment models. One of these is that the nature of competition plays an important role in determining whether government policy has the intended, desired effects. It is important to model the nature of competition endogenously in this context, since government policy can significantly influence the nature of competition through its effect on defence spending (Dixon, 1986). Secondly, the promotion of one set of firms represents a ‘taxation’ of others. Government policy thus entails a political cost, an important ingredient for formulating government policy. Existing literature does not make both government policy and the nature of competition endogenous. This creates a major difficulty with the rent-extraction argument since political costs constrain a government’s behaviour whilst the benefits from strategic government policy largely depend on the endogenous degree of competition. An optimal government policy will thus be misconstrued unless we determine these elements endogenously.

We combine two distinct ideas — the probabilistic voting model and the conjectural variations model — to endogenise the nature of competition and the government policy on defence spending. First of all, the probabilistic voting model is a recent development in political theory to counter the time-honoured predictions of traditional political theory (Wittman, 1989): social thinkers have argued that democratic governments are plagued by the absence of a stable electoral equilibrium and the risk of expropriation of minorities by majorities. The probabilistic voting model, by assuming a universally concave votes-to-offers curve, establishes the existence of a stable voting equilibrium and suggests that the expropriation argument
is ‘an optical illusion’. The probabilistic voting model will allow us to endogenise relevant government policy. Secondly, the conduct of regional firms has been made endogenous in the very important contribution of Bresnahan (1982), popularly known as the conjectural variations model. Laitner (1980), Bresnahan (1982), Kamien and Schwartz (1983) and Perry (1982) question the robustness of the Cournot model as an equilibrium concept by using the model of consistent conjectured reactions. A conjectural variation is a conjecture by one firm about how another firm will adjust its decision variable in response to adjustments by the first firm. The consistent conjectural equilibrium is believed to be a rational expectations equilibrium that collectively confirms individual expectations about changes in the decision variables. It is argued that the Cournot equilibrium is not generally a consistent conjectural equilibrium. However, there are problems with this approach: the consistent conjectural equilibrium is not equilibrium, since each firm can unilaterally change its output to make more profits (Bresnahan, 1981, p. 937). Experimental evidence indicates that agents do not converge on the consistent conjectural equilibrium (Holt, 1982). It is also recognised that the conjectural variations parameter is not observable in principle. It has been noted that these models lack a game-theoretic foundation (Shapiro, 1989). Yet it is widely held that conjectural variation models are still very important in examining scenarios underpinned by complex dynamic processes.

The simplified story of our model subsumes the following: we examine government policy that is concerned with an allocation of defence spending between two different regions, or locations. We postulate that defence spending brings a host of local goods to the regional economy, like roads, electricity, water supply, and
security. It is argued that the location of defence spending will determine the short run cost functions of firms in these locations. These costs of production will, in turn, determine the nature of competition in the product market\(^8\). As a result, government policy will endogenously determine the degree or nature of competition in the market. On the other hand, this allocation of defence spending enables us to analyse the political cost: the promotion of an industrial location is an implicit taxation of firms in other locations. As the government increases defence spending in a location, voters from this constituency increase their political support for the incumbent government whilst this government loses votes from the other location. An allocation of defence spending thus influences voters’ evaluation of the government, and this evaluation constrains government policy on defence spending that, in turn, impinges on voters’ evaluation. In the proposed equilibrium of the game, the government chooses the optimal allocation that influences the voters’ evaluation that, in turn, maximises the probability of re-election of the incumbent government. The optimal allocation will determine the nature of competition in the product market.

The game unfolds over two stages: in stage I, the government allocates defence spending in order to maximise its probability of re-election given the voters’ preferences and characteristics. Thus, at stage I an electoral platform is created. In stage II, two firms with different production bases compete for a unified market. At

---

\(^8\)Arrow and Kurz (1970) and Barro (1990) have stressed the importance of public infrastructure as a substitute for private capital in the production function. Thus, an increase in public infrastructure in an industrial location, \textit{ceteris paribus}, reduces cost of production of all firms in that location. Alternatively, one may assume that public infrastructure reduces costs due to the ‘iceberg’ effect of Samuelson (1954): if public infrastructure is inadequate then a large portion of the goods produced will be wasted and will fail to reach consumers. An increase in public infrastructure therefore reduces cost by facilitating trade. Public infrastructure has assumed significance in Europe as EC-funded infrastructure projects aim to create strategic advantages for member nations (Martin and Rogers, 1995). As examples, the Channel Tunnel, high-speed rail network and new telecommunication networks have been undertaken in recent years to boost industrial development and convergence in Europe.
the perfect Nash equilibrium of this sequential game, the government achieves an electoral equilibrium that maximises votes cast in its favour. This optimum allocation of defence spending provides a winning electoral platform to the incumbent government from which the costs of production for firms and the nature of competition in the product market emerge.

### 3.1.2 Allocation of Defence Spending in Bi-sectoral Model

We consider a national market that has duopolists with distinct production locations. Our model is consistent with a finite number of locations, or regions in an economy. We assume that these location choices have already been made and, hence, the location of a firm is part of the history. It is also assumed that the national economy consists of these locations. The government has a given amount of tax revenue that is to be distributed between these locations for defence spending. The impact of the defence spending will reduce costs of production. Thus the larger is defence spending in location $i$, vis-a-vis $j$, the lower is the cost of production of the firm at location $i$. We further assume that buyers are located in such a fashion that the cost of transport is zero so there is a single price that prevails in the market. The market is thus characterised by the following sequential game: at stage I the electoral equilibrium is achieved and that, in turn, determines the distribution of defence spending. The distribution of defence spending determines the costs of production of the duopolists/oligopolists in stage II of the game; they engage in competition in the product market to capture the largest possible market shares.
The solution to the game is proposed in a recursive fashion. We first determine the market outcome at stage II and then trace back to stage I, a technique popularly known as the logic of backward induction. Rationality and complete information dictate that both these firms and the government will form their expectations by looking ahead and foreseeing the product market equilibrium of stage II. If agents behave in this fashion, they are said to have rational expectations. In stage I all these agents adopt their optimal actions based on rational expectations. The outcome is the perfect Nash equilibrium of the proposed game.

3.1.2.1 Stage II: Nature of Competition in the Product Market

We introduce the following assumptions to characterise the product market.

*Assumption 1:* Industry demand function (inverse) is linear:
\[ p = a - bX \] \hspace{1cm} (9)

where \( p \) and \( X \) are price and output respectively and \( a, b > 0 \).

**Assumption 2:** There are two regions, or locations, for defence spending. We assume that firm \( i \) is based at location \( i \), for \( i = 1, 2 \).

**Assumption 3:** The cost of production of firm \( i \) is as follows:

\[ c_i = c_i(X_i, G_i) = mX_i^2 / G_i \] \hspace{1cm} (10a)

Where

\( X_i \): output of firm \( i \), \( i =1,2 \)

\( G_i \): Allocation of defence spending to location \( i \) where firm \( i \) is located

The marginal cost is hence given as \( MC_i \):

\[ MC_i = 2mX_i / G_i \] \hspace{1cm} (10b)

Thus \( MC_i \) is increasing in \( X_i \) given \( G_i \) and decreasing in \( G_i \) given \( X_i \):

\[ \frac{\partial MC_i}{\partial X_i} = 2m/G_i > 0 \] \hspace{1cm} (10c)

\[ \frac{\partial MC_i}{\partial G_i} = -2mX_i/G_i^2 < 0 \] \hspace{1cm} (10d)

The profit function of firm \( i \) is as follows:
\[ \Pi_j = X_j(a - bX_j) - mX_j^2 / G_j \] (11a)

It is assumed that the firms have non-zero conjectural variation and, hence, we get the following for firm 1:

\[ d\Pi_1 / dX_1 = a - 2bX_1 - bX_2 - bX_1(dX_2 / dX_1) - 2mX_1 / G_1 \] (11b)

We define the conjectural variations as the following:

\[ \phi_1 = (dX_2/dX_1), \phi_2 = (dX_1/dX_2) \] (11c)

Hence the reaction functions in quantity decision of the duopolists are the following:

\[ X_1 = (a - bX_2) / (2b + \phi_1b + 2m / G_1) \] (11d)
\[ X_2 = (a - bX_1) / (2b + \phi_2b + 2m / G_2) \] (11e)

The consistency condition is that the change of \( X_1 \) with respect \( X_2 \) along (11d) must be self-confirming. That is, the slopes of the reaction functions must be equal to the appropriate conjectural variations. Hence:

\[ \phi_2 = [-b/(2b + b\phi_1 + 2m/G_1)] \] (12a)
\[ \phi_1 = [-b/(2b + b\phi_2 + 2m/G_2)] \] (12b)

The consistency conditions (12a) and (12b) give the following:

\[ 2b\phi_2 + \phi_1\phi_2b + 2m\phi_2 / G_1 + b = 0 \] (13a)
\[ 2b\phi_1 + \phi_1\phi_2b + 2m\phi_1 / G_2 + b = 0 \] (13b)
Subtracting (13b) from (13a) will yield:

\[
(\phi_2 / \phi_1) = \frac{[b + (m/G_2)]/[b + (m/G_1)]}{(13c)}
\]

The more negative \(\phi_1\) firm 1 believes that firm 2 is more accommodating. Thus, at the consistent conjectural equilibrium all expectations are ex post confirmed and, hence, \((\phi_2 / \phi_1)\) is a measure of the relative competitiveness of firm 1.

Definition 1: We define \((\phi_2 / \phi_1)\) as the degree of competitiveness of firm 1 vis-a-vis firm 2.

The larger \((\phi_2 / \phi_1)\) is, the more accommodating firm 1 is; and vice-versa. It is instructive to note that the degree of competition depends on the allocation of defence spending \(G_1\) and \(G_2\). We now turn to the explanation of \(G_1\) and \(G_2\) that will in turn determine the degree of competition.

3.1.2.2 Stage I: Electoral Equilibrium

Citizen voters have two entitlements: as an economic agent, each voter has entitlement to returns from the firm at his location. We assume that the higher the profit of a firm, the larger the economic return to the citizen residing in the location in which the firm operates. As a voter he has an entitlement to influence the rules of the game: that is, the allocation of defence spending. This allocation, in turn, affects his economic returns. It is assumed that each citizen exercises the voting rights in his own interest. The rational government chooses the allocation of defence spending (rules of the game) that will give rise to nominal returns to voters and will, in turn, maximise its votes. The electoral
equilibrium is the optimal allocation of defence spending that maximises the votes cast in favour of the incumbent government.

In order to determine the allocation of defence spending $G_1$ and $G_2$ we now look at the electoral equilibrium of stage I. We apply the probabilistic voting theorem to explain the electoral equilibrium (see Wittman, 1989). It is assumed that voters are located in two locations of defence spending. Within a location, voters have an identical preference for the defence spending. Thus, there are two groups of voters and their preferences are represented by their utility functions $U_1(G_1 - G^a)$ and $U_2(G_2 - G^b)$ and $S_1$ and $S_2$ are the sensitivity parameters of these groups of voters. $G^a$ and $G^b$ are respectively the ‘ideal points’ of voter groups 1 and 2 given their tax burdens. For instance, $S_1$ represents the extent to which voters from group 1 based at location 1 decrease their support/ vote for the political party in response to a divergence between $G_2$ and these voters’ preferred allocation of defence spending $G^a$. We specify the votes-to-defence spending function as:

$$V_1 = 50 + n_1S_1(U_1(G_1 - G^a))$$  \hspace{1cm} (14a)$$
$$V_2 = 50 + n_2S_2(U_2(G_2 - G^b))$$  \hspace{1cm} (14b)$$

Suppose $G^*$ is the total tax revenue to be distributed and group $i$ of voters is located at location $i$. Each group splits votes equally between two parties when both the parties offer the same defence spending$^9$. Otherwise, a party loses votes as its defence spending offer deviates from the ‘ideal point’ of a group. From Wittman (1989) we know that

---

$^9$Why should voters care for infrastructure? One plausible explanation is that voters are the stakeholders of the firms both as shareholders and employees.
vote-maximising electoral equilibrium is ensured when the following first order condition is satisfied\textsuperscript{10}:

\[ n_1S_1(\partial U_1/\partial G_1) = n_2S_2(\partial U_2/\partial G_2) \]  

\( (14c) \)

Assumption 4: We specify the utility functions of the two groups of voters as the following:

\[ U_1(G_1 - G^a) = -(G_1 - G^a) \]  

\( (14d) \)

\[ U_2(G_2 - G^b) = -(G_2 - G^b) \]  

\( (14e) \)

The above formulation of the utility function suggests that voters dislike both shortfalls and over-allocation of defence spending to their respective localities. The latter needs an explanation: voters may dislike an over-allocation if it leads to congestion and pollution \textsuperscript{11}.

Proposition 1: If equations (14d) and (14e) capture voters’ preferences and equations (14a) and (14b) are the votes-to- (defence spending) offer functions, then the optimal allocations \( G_1 \) and \( G_2 \) of the defence spending that maximise the votes of the incumbent government are given by:

\[ G_1 = w_1(G^* - G^b) + G^a(1 - w_2) \]  

\( (15a) \)

where \( w_1 = (n_2S_2)/(n_1S_1 + n_2S_2) \)  

\( (15b) \)

Similarly, \( G_2 = w_2(G^* - G^a) + G^b(1 - w_2) \)  

\( (15c) \)

\textsuperscript{10}It can be checked that the second order condition is automatically satisfied.

\textsuperscript{11}It is important to note that a simple concave utility function, where voters are happier the more infrastructure investment they get but decreasingly so, will provide similar results.
where \[ w_2 = \frac{n_1 S_1}{n_1 S_1 + n_2 S_2} \] \hspace{1cm} (15d)

Proof: See the appendix.

Equations (15a)-(15d) establish that political elements such as \( n_i \), \( S_1 \) and \( S_2 \) are critical ingredients in determining \( G_1 \) and \( G_2 \) given \( G^* \). If the incumbent government wants office and voters want defence spending, then the vote-maximising government allocates defence spending to create an electoral equilibrium platform that is sensitive to voters’ characteristics. The vote-maximising allocation of defence spending influences the nature of competition due to its effect on the costs of production of duopolists. The higher the allocation that a particular location gets, the lower is the cost of production of the firm based there. This firm, with its lower costs, will be able to extract larger profits from the output market.

### 3.1.2.3 Electoral Equilibrium and Nature of Competition

From equations (15c) and (15d) it is evident that the allocation of government investment in defence spending depends on \( w_1 \) and \( w_2 \) given the exogenously determined budget and the ‘ideal points’ \( G^a \) and \( G^b \). It is instructive to note that \( w_1 \) and \( w_2 \) depend on the sizes of these voter groups — \( n_1 \) and \( n_2 \) — and their political sensitivities, \( S_1 \) and \( S_1 \), to the non-fulfilment of their demand for defence spending. From equation (13c) we know that the nature of competition in the product market depends on the ratio of \( G_1 \) and \( G_2 \) given the values of \( a \) and \( b \). Hence, combining (13c) and (15a) through to (15d), we argue that political elements such as the size of the groups \( n_1 \) and the political sensitivities of these voters, \( S_1 \) and \( S_1 \), are the main determinants of the
degree of competition, \((\phi_2 / \phi_1)\) in the product market. In order to highlight this finding let us consider two special cases.

Assumption 5: Suppose each group of voters wants all available funds \(G^*\) to be ploughed back into their respective localities. Hence,

\[
G^* = G^* = G^b \quad \text{(16a)}
\]

Proposition 2: In the perfect Nash equilibrium of the proposed sequential game, the degree of competition \((\phi_2^* / \phi_1^*)\) lies between the Cournot and Bertrand values and is sensitive to the political landscape of the simplified society.

Proof: In the perfect Nash equilibrium all agents hold rational expectations about the market outcome at stage II which are given by equations (11d) and (11e). The rational expectations outcome in turn depends on the allocation of defence spending \(G_1\) and \(G_2\) at Stage I. Given the rational expectations outcome, the incumbent government chooses \(G_1\) and \(G_2\) at stage I to maximise votes. Suppose voters’ ideal points are given by Assumption 6, then we know:

\[
G_1 = [(n_1 S_1) / (n_1 S_1 + n_2 S_2)]G^* \quad \text{(16b)}
\]

\[
G_2 = [(n_2 S_2) / (n_1 S_1 + n_2 S_2)]G^* \quad \text{(16c)}
\]

Substituting (16b) and (16c) we get:

\[
(\phi_2^* / \phi_1^*) = \{b G^* + m(n_1 S_1 + n_2 S_2) / (n_2 S_2)\} / \{b G^* + m(n_1 S_1 + n_2 S_2) / (n_1 S_1)\}
\]

(17a)QED.
Equation (17a) establishes that the equilibrium degree of competition ($\phi_2^*/\phi_1^*$) is determined by the political factors ($n_i S_i$) of the society — given the cost and demand conditions. It is also evident that the equilibrium values lies between the Cournot and Bertrand values.

Now we turn to the comparative static results.

### 3.1.3 Comparative Statics (Under Assumption 5)

The starting point of this section is that each group of voters would want the whole of defence spending $G^*$ (assumption 5). In this scenario we have the following comparative static results that characterise the proposed perfect Nash equilibrium.

*Proposition 3*: As the size of a group of voters increases *ceteris paribus* the degree of competition shifts against the interest of the other group.

*Proof*: Differentiating (17a) with respect to $n_2$ we get:

$$\frac{\partial (\phi_2^*/\phi_1^*)}{\partial n_2} < 0$$

(17b)

Thus, as $n_2$ increases given the size of group 1, the competitiveness of firm 1 based at location 1 goes down, since the political power of its opponent increases. Similarly, we can show:

$$\frac{\partial (\phi_2^*/\phi_1^*)}{\partial n_1} > 0$$

(17c) QED
Proposition 4: In the perfect Nash equilibrium, the competitiveness of firm $i$ is an increasing function of $S_i$ and a decreasing function of $S_j$. Thus, the voter sensitivity is an important determinant of the degree of competitiveness in the proposed equilibrium.

Proof: Details are straightforward. We find:

$$\frac{\partial (\phi_2^* / \phi_1^*)}{\partial S_2} < 0 \quad (17d)$$

In an analogous fashion we find

$$\frac{\partial (\phi_2^* / \phi_1^*)}{\partial S_1} > 0 \quad (17e) \text{ QED.}$$

The upshot is that a location gains a larger (smaller) chunk of the defence spending if voters residing in this location are more (less) sensitive about the deviation of the actual defence spending from their desired allocation. Thus, if voters of a region are highly committed to the incumbent government; the region will receive a lower share of defence spending that will, in turn, impoverish the region and the voters of the region.

### 3.1.4 Comparative Statics (Under an Alternative Assumption)

It is presumed that voters want a fixed share of the defence spending and that any deviation from this share lowers the welfare of the voters. One may rationalise this by assuming a congestion, or pollution, cost. We represent this idea under the following assumption:

Assumption 6: Suppose each group of voters has the ideal point as the following:

$$G^a = G^b = \lambda G^* \quad (18a)$$

where $0 < \lambda < 1$. 
**Lemma 1:** Let equation (18a) be the preferences of the voters. The vote-maximising allocation of defence spending $G_1$ and $G_2$ are given by:

\[ G_1 = G^* (w_1 + \lambda + 2w_1 \lambda) \]  
\[ G_2 = G^* (w_2 + \lambda + 2w_2 \lambda) \]  

(18b)  
(18c)

As a result, the degree of competition in equilibrium is as follows:

\[ \phi_2^* = \frac{bG^* + \frac{bm}{w_2(l+2\lambda)} + \lambda}{bG^* + \frac{bm}{w_1(l+2\lambda)} + \lambda} \]  

(18d)

Proof: Substituting (18a) into (14a) yields:

\[ G_1 = G^* (w_1 + \lambda + 2w_1 \lambda) \]  

(18a)

Similarly, $G_2 = G^* (w_2 + \lambda + 2w_2 \lambda)$

(18b)

Substituting (18b) and (18c) into (12c) yields the degree of competition in equilibrium which is given by (18d). QED.

**Lemma 2:** The competitiveness of firm 1 in equilibrium is an increasing function in $w_1$ and decreasing function in $w_2$.

Proof: Straight-forward differentiation of (18d) with respect to $w_1$ and $w_2$ yields the above. QED.

**Lemma 3:** The weight $w_i$ is an increasing function of $S_i$ and a decreasing function of $S_j$.
Proof: Differentiation yields the result.

Proposition 5: From Lemma 2 and Lemma 3 we find that the competitiveness of firm i in equilibrium is an increasing function of the political sensitivity of voters of group i.

Proof: Combining Lemma 2 and Lemma 3 we get

\[
\frac{d \phi_2^*}{\phi_1^*} + \frac{d \phi_1^*}{\phi_2^*} > 0
\]  

(19a)

Similarly, \(d(\phi_2^*/\phi_1^*)/dn_1 > 0\), \((d\phi_2^*/\phi_1^*)dn_2 < 0\), \((d\phi_2^*/\phi_1^*)/dS_2 < 0\)

The comparative-static results show the precise nature of sensitivity of the degree of competition to changes in political factors. As examples, the degree of competition or competitiveness of firm 1 goes up (down) as the number of voters in its location, \((n_i)\), goes up (down) ceteris paribus. The competitiveness of firm 1 goes up (down) as voters in its production location become more (less) sensitive to the non-fulfilment of their demand for defence spending. That is, the competitiveness of firm 1 goes up (down) as \(S_1\) goes up (down). In an analogous fashion, the competitiveness of firm 1 goes up (down) as \(n_2\) goes down (up) and \(S_2\) goes down (up).

3.2 Discussion and Conclusion

The Smithian perspective on competition highlights a congruence of interests of market participants: for example, if a buyer wishes to buy milk and is prepared to offer money in return, and the seller (milkmaid) wants money and willing to give milk in exchange for the money. This exchange allows each to achieve one’s goal and they thereby help each
other. In a complex market mechanism, however, economic problems are often embedded in conflict. It is recognised that the market mechanism can easily handle congruent interests but may fail to resolve conflicts in a harmonious or fair fashion (see Sen, 1984). To redress such conflicts the visible hand of government has usually been invoked (Ostrom, 1987). In this work we highlight two types of conflicts — namely, market conflicts and political conflicts — and, thereby, attempt to weave them together to illuminate an important intersection between the economy and the polity. We introduce conflicts at the market level in the usual fashion as market rivalry — two prototype firms compete against each other for market shares. By applying the simple game-theoretic reasoning, we obtained the equilibrium market outcome. However, the core of the problem remains that the emerging market outcomes, the conduct of firms, market shares and take-home profits of these rivals critically depend on the choice of their strategic variable and, hence, on the nature of competition. Dixon (1986) introduces consistent conjectural variations to make the degree of competition endogenous in a strategic investment model and establishes that the degree of competition is driven by investment decision of firms since capital stocks impinge on costs of production. We exploit this intuition of Dixon by focusing on the impact of defence spending, as opposed to private capital, on costs of production. The introduction of defence spending in our model allows us to link the second type of conflict, namely the political conflict, with the first type. Since, the availability of defence spending is fixed, it is modelled that there is no congruence of interests of agents coming from two distinct locations: as Hirsch (1977) notes, ‘what winners win, losers lose’. An allocation

\[\text{From an early work of Marshak and Nelson (1962) we know that if the production structure is inflexible, then the Cournot outcome is a natural conclusion. On other hand, if production is completely inflexible, then the Bertrand outcome is the likely candidate. It is argued that production is more flexible, the steeper the MC functions. The nature of competition is introduced as an external assumption in Brander and Spencer (1983, 1985), Dixon (1985), Dixit (1984), Eaton and Grossman (1986), and Yarrow (1986).}\]
of defence spending will naturally entail political costs and benefits that a self-seeking government — driven by electoral motive — would try to exploit. An incumbent government will naturally choose an allocation to maximise the probability of its re-election. Our model on probabilistic voting has antecedents in the literature: Lindbeck and Weibull (1987) and Dixit and Londregan (1994) adapt the probabilistic model to examine public policies that redistribute income to narrow groups of voters. They assume that the various groups differ in their preferences for the political parties and thereby identify the political characteristics of a group that makes it an ideal candidate for receiving political largesse. The upshot is that these authors mainly study the major determinants of the political success of a special interest group. On the contrary, we start off with the political characteristics of voters and then apply the probabilistic voting theorem to determine the electoral equilibrium that is driven by political largesse in the form of defence spending. This is how our model resolves political conflicts.

The resolution of political conflict can have serious ramifications for the product market due to its impact on the allocation of defence spending. This is a serious point to consider: traditional political theory highlights the failure of majority-rule voting caused by the absence of a stable electoral equilibrium. As a result, political instability can create significant instability in product markets. This is where we apply the probabilistic voting theorem to highlight the existence of a stable voting equilibrium to establish that democratic political markets are well organised to promote the vote-maximising allocation of defence spending that will, in turn, lend stability to the product markets: the model predicts that the vote-maximising government adopts an optimal allocation of defence spending that induces an electoral equilibrium that, in turn, maximises its chances of re-election. In this perspective, the nature of competition, structure industry
and conduct of firms in an oligopolistic market critically depend on this electoral
equilibrium and hence on voters’ preferences and characteristics. The degree of
competition is thus identified with the equilibrium allocation of defence spending and
becomes a continuous variable, rather than a binary variable. It captures intermediate
situations between the pure Bertrand and Cournot cases. We also find important
comparative-static results that show that the structure and conduct of firms, and the
nature of competition in oligopolistic markets, will be sensitive to political
characteristics.

Future extensions of the work are desired on two fronts: voters’ preferences should be
made dependent on the final good’s price and thus on the nature of competition. This
extension will enhance our understanding of the nature of equilibrium by providing
circular interdependence between government policy and market outcomes. Secondly,
important extension is possible by allowing voters to ‘vote with their feet’. This
extension will once again provide circular interdependence between government policies
and market outcomes.
CHAPTER 4

THE TERRORIST ORGANISATION AND TERROR-CYCLE MODELS

4.1 Introduction to International Tension: Global Roots of Local Conflicts

The main argument of this chapter is to posit conflicts as a product of continuing international chasms, splits and differences of political and social ideologies. We argue that conflicts are, to some extent, driven by international tension, or global, ideological and geo-political factors. Notwithstanding the global influence, local factors — such as income inequality, income growth or lack of it, and the influence of political institutions — can and do exacerbate conflicts.

We will start our discussion with a glimpse of the great global conflicts, as current conflicts have roots of global origin, and are products of what is known as international tension. Comprehensive models will capture the feedback between local factors and international tension, and will explain various subtle inter-temporal dynamics of conflicts, violence, and terrorist activities.

The idea of ideological chasms and global tension is not new: Rattinger (1975) introduced it into the basic Richardson-type model. International tension was quantified in terms of verbal statements made by nations embroiled in conflict. In a work on Iraq-Iran conflict, Abolfathi (1978) introduced US–Soviet Union rivalry as an explanatory variable. In a differential game international tension, as measured by
the sum of military expenditure, has been modelled by Zinnes et al (1978) to explain the arms race. Our model differs significantly from these models as we focus on actual conflicts and derive an endogenous index of international tension-driven conflict, instead of an exogenous measure of international tension. As a result, our model, its empirical questions and findings, are significantly different from the early attempts.

The plan of the chapter is as follows: in Section 4.1 we provide a detailed outline of the evolution of global rivalry and conflicts since the First World War. In Section 4.2 we develop a major theoretical model to explain how local conflicts can be created by international tension by examining conflicts mainly in the context of violence perpetrated by terrorist groups. Ours will be a first model in understanding the economics of terrorist group formation in a competitive model. The model depends on the endogenous partnership formation between terrorist agencies/ organisations across borders and will explain how local and global issues of conflict can mix to give rise to an equilibrium conflict, which therefore has a tendency to self-perpetuate. The model also explains the incentive structures of terrorist organisations, and their sizes.

In Section 4.3 we turn to a very important empirical regularity that has characterised conflicts, especially terrorist attacks: terrorist attacks don’t move in a linear fashion, but rather display temporal cyclical paths. We develop a theoretical model to explain why such activities display such a pattern. In Section 4.4 we finally turn to the question of whether terrorist activities and conflicts can be endogenously-driven, offering an alternative viewpoint to the current emphasis in literature on
comparative-static analyses in explaining the time-paths of conflicts and terrorist activities. We will develop a simple model of terror assets to explain the possibility of endogenous-driven cyclical paths for conflicts and terrorist activities.

4.1.1 The Influence of World War I on Global Chasms and Ongoing Tensions: Historical Diary of Relevant Events

The first great and truly global conflict started as World War I (hereafter WWI) on the 28 July 1914, and involved most of the world’s main powers. On a statistical front, some sixty-five million soldiers were mobilised, of whom 12% died and more than twenty-one million were wounded. The foundation stone of the WWI was laid by the German Chancellor Otto von Bismarck who, in order to maintain German supremacy in Central Europe and contain French influence, sought to create a European power axis with Russia and Austria-Hungary in 1871. It is noteworthy that France was suffering from the aftermath of the Franco-Prussian war. In 1882 Bismarck formed a somewhat tenuous regional power enclave with memberships of Germany, Russia, Italy and Austria-Hungary, known as the Triple Alliance. This led to German diplomatic supremacy on European soil by the early 1890s, although the enclave itself was somewhat unstable, as any collusive arrangement usually is; we will examine this in greater theoretical detail subsequently.

Excluded from the enclave, France felt vulnerable and sought to break up the Triple Alliance. Eventually, in 1894 France and Russia formed the Dual Alliance for two reasons: because there was some disunity between Russia and Germany, and because Russia was in need of French capital. The formation of the Dual Alliance acted as a
counterbalance to the Triple Alliance. The duopoly of power sharing provided some stability and an uneasy lull before the storm in continental Europe.

During the last five years of 1890s Europe underwent changes that attracted British attention to the split of the continent into two rival enclaves. First, German nationalism rose. Second, German activity in Africa caused serious concern for British colonial interests. Third, Great Britain noted the emergence of Germany as a significant competitor to British industrial goods in regional markets. Finally, large-scale German naval growth caused serious concern among British politicians. In a series of quick and deft manoeuvring, Great Britain and France buried their differences with the Entente Cordiale in 1904. The difficult task of roping in Russia was completed in 1907 when Great Britain, France and Russia formed the counter enclave, the Triple Entente, making the split of Europe into two rival armed camps was complete. This was the source of open conflict in Europe, which we argue still continues in different forms.

A series of trigger factors exacerbated tensions by 1910:

- 1905-1910 witnessed significant industrial growth in Europe that triggered the need to protect and expand the sources of raw materials.

- The main sources of raw materials were the European colonies, which became prime targets for capture, seize and exploitation.

- Industrial growth in Europe caused a world-wide struggle for markets.
• The emergence of surplus capital in Europe needed a secure haven for re-investment.

• Germany began to pose a serious challenge to Great Britain as a global leader of industry and commerce.

• German imperialist ambitions disquieted established imperialist powers.

• A sense of heightened nationalism rose in Germany, France, Italy, Russia, Czech, Polish and the Balkans, among other nations.

• The Balkan war of 1912-13 added to the volatility of continental Europe.

• Italy’s plans in North Africa received active support from Great Britain and France, dealing a final blow to the Triple Alliance and leading Germany to write off Italy as an ally by 1914.

• In this international anarchy, there was continuing fear and recrimination between rival groups. The Hague Peace conferences in 1899 and 1907 did little to slow down the war machineries of the rival camps.

The complexities in Europe gradually descended into the chaos of World War I, at first seen as a purely European struggle — the Wilson government of the United States wanted no part in it. However, the US proclamation of neutrality was
challenged within the country by rival factions who championed the Allied or German causes. Bearing a striking similarity to Europe, the US was polarised. A strong initial wave of sympathy for Great Britain and France was counterbalanced by hostility towards Great Britain by Irish-Americans and German-Americans. Americans of Italian origin displayed pro-Italian sentiments. During 1914-1917, it seemed that this cleavage made American entry into World War I a remote possibility. However, opinion changed gradually and the US government increasingly leaned towards the Allied cause. Several factors are important for this tilt of the American foreign policy towards the Allied cause:

- The British and the Allies promoted a view of the war as a product of ruthless German aggression aimed at conquering the world. This vision of Germany gradually embittered Americans against Germany.

- German submarines played havoc in the Atlantic Ocean and destroyed Allied supply lines. This created fear in US politicians that control of the Atlantic Ocean would be ceded to the Germans unless steps were taken.

- The US economy flourished due to the Allied forces ammunition orders. Thus, business interests aligned with Allied interests.

- In such a grave situation, the American people and politicians were appalled by the Zimmerman Note: on 1 March 1917 the German Foreign Minister Arthur Zimmerman made official offers to Mexico of the American states of
New Mexico, Arizona, and Texas if Mexico would join Germany in the war. This was perceived as a threat to dismember the USA.

- The overthrow of the Tsarist regime and the establishment of Bolsheviks in Russia created a sense of insecurity in the US mindset. The public felt that democracy was threatened.

- By early April of 1917, anti-German sentiments reached a peak in the USA. On this tide of anti-German feeling, Congress voted to enter the war. Mass support for the war came from the belief that the American troops were going to end the war and protect democracy.

By December 1917, Russia under the control of the Bolsheviks withdrew from the war, signing a truce with the Central Powers (Germany, Britain and France). Russia abandoned all claims to Poland, Lithuania, Estonia, Ukraine, Latvia and made vast economic concessions to the Central Powers. Thus, after winning the war on the eastern front, German hopes were high for success in the west. On July 15, the Germans attempted to break through enemy lines at Chateau-Thierry. Allied counterattacks started on 18 July. The US conveyed the messages to Germany that the involvement of the US army was to create *just* peace: ‘peace without victory’. That rang with the psyche of the German people and soldiers alike. At the same time, the presence of the US army conveyed to the people of Germany that the Allied forces were fighting ‘the military masters of the German people and not the mass of the German people’ (Porter, 2005).
One important element of 20th-century war is mutual assured economic destruction (MAED). The immense scale of military operations, and the damage caused by bombardment, set the economic cost of war incredibly high. The conservative pecuniary cost of war is conservatively put at $1,000,000 an hour by the British only (Clodfelter, 2002). The other, inestimable, cost is of humans in the war supply-chain: some 65 million people were mobilised; 8 million fell to death and 21 million were wounded. There appeared a great war-weariness by 1916: the cost of war became too burdensome for humans.

These dynamics led to what is known as the quiet German revolution. On 29 October 1918, the Kaiser slipped out of Berlin for the General Headquarters as he felt insecure without a bastion of army protecting him from the angry masses. Naval mutinies removed Kiel from the control of the Kaiser. Bremin and Hamburg followed suit. The new rebel forces sent emissaries to the Allies to initiate an armistice. The Kaiser abdicated on 9 November, and by 11 November the armistice was signed.

The greatest tragedy after the armistice was the betrayal of the faith of the masses of the Central Powers that there would be an honourable peace under the stewardship of Wilson. What transpired was a fractured peace as President Wilson faced manoeuvring by French, British and Italian powerbrokers. Wilson wanted two important institutions in Europe: the disarmament of all of Europe so that the threat of MAED did not hang their heads, and self-determination for the people of the Central Powers. Very quickly, these ideals were pushed to the periphery, and the Allied Forces imposed a one-sided peace on the Central Powers. Bitter verbal battles,
for instance between Wilson and Clemenceau of France, marred the possibility of negotiating a real peace. Great Britain, France and Italy (the GFI axis) enforced a one-sided disarmament, and evicted Germans from regions the GFI axis felt important for their safety. It became a humiliating moment for the Central Powers, which became a vanquished side with little perceived ability to pose a military threat to the Allies in future years.

The Allies re-defined the boundaries of Europe. From the war and the fractured peace a new Europe emerged:

- Europe remained as fragmented as before whilst the US arose as an industrial power of the new world order.
- The economic strength of France and Great Britain were severely impaired.
- Germany tottered on the verge of anarchy.
- Local monarchies and feudal elements crumbled.
- Strong nationalistic sentiment started sweeping Europe again.
- Economic and social reforms changed the picture of Europe within a decade.

The seeds of World War II can be seen in the endgame depicted above.

The greatest war of world history began on 1 September 1939 with the invasion of Poland by Germany. It lasted six years and caused unprecedented bloodshed, including the attempt to eradicate the European Jews and two nuclear attacks on Japanese cities. These two holocausts will haunt the psyche of every person on our earth for long beyond our current time. Even in the darkest corners of our globe,
these holocausts warn every people against a unipolar system in which a group of people can be singled out by the powerful for annihilation. It is this fear that drives various groups to arm themselves as a protection from destruction.

It took less than 20 years for Germany to arm itself and march back to the Rhineland, from which German nationals had been expelled at the conclusion of World War I. The growth of war machines under Adolph Hitler became evident. In Italy, fascism rose under Benito Mussolini, a former ally of the Great Britain in World War I. Both Germany and Italy tested the new international waters by attacking small nations: Germany marched through Austria and annexed parts of Czechoslovakia, while Italy moved against Ethiopia, and in 1939, both became involved with Russia in Spain, where a civil war had been raging since 1936. Germany and Italy quickly vanquished Russia and established another fascist state in Europe. On the other side of the world Japan was devouring China, which yielded mild protests from world powers. The invasion of Poland by Germany triggered the onset of a European war, while the attack on Pearl Harbour in 1941 by Japan led to the merger of two wars and escalated into one of the worst wars in the history of mankind.

Even though conflicts since 1990 have been local, we argue that there remains a significant global element. For an ongoing conflict, both sides in a conflict need economic resources, manpower, willingness to fight, fighting technology, training, arms, and a gamut of logistics. Unless there is a global element in conflicts, they will evaporate into simple discontent, without the paraphernalia of modern artefacts of war. As a result, behind most conflicts there will be the presence of some of the divisions, hiatus, splits, cleavages — social, political, or ideological — that spurred
wars and conflicts on European soil. If this is proposition is true, from the statistics of conflicts we will be able to offer a measure of the impact of international/global issues on local conflicts. In the following sections, we offer a tentative measure and explore its implications.

4.1.2 Mutual Assured Destruction and the Onset of the Cold War and the Fragmentation of the Globe

The Cold War was the era of rivalry, conflict and tension between the USA and the Soviet Union and their respective allies from the mid-1940s to the early 1990s. In the specific sense of the post-World War II geopolitical ambitions, rivalry and tensions between the Soviet Union and the USA, the term *Cold War* has been attributed to American financier and US presidential advisor Bernard Baruch. On April 16, 1947, in a much famed speech Baruch said, ‘Let us not be deceived: we are today in the midst of a cold war’ (Sauvain, 1996, pp. 146).

The Cassell Companion notes that the expression was actually created by Baruch’s speechwriter, Herbert Bayard Swope, who had been using it privately since 1940. Columnist Walter Lippmann gave the term wide currency after his 1947 book, titled *Cold War*.

Throughout this period, the enmity and rivalry between the two superpowers spread to several arenas, such as military coalitions, ideology, propaganda, the arms race, proxy wars and conflicts, and the space race. Tensions between the USA and the Soviet Union even triggered boycotts of major sporting events. The Cold War was very costly for both superpowers — as witness defence spending, a massive
conventional and nuclear arms race, and a series of proxy wars and open conflicts. There was never a direct war between the USA and the Soviet Union; there was a long period of military build-up, pseudo wars, shadows of nuclear holocaust, and political battles for support around the world, including significant involvement of allied and satellite nations in local ‘third party’ wars.

Although the US and the Soviet Union had allied against the Axis powers, the two sides entertained serious differences on how to reconstruct post-war Europe/world even before the end of World War II. Over the following decades, the Cold War spiralled outside Europe to every region of the world, as the USA looked for the ‘containment and rollback’ (ref) of communism and forged numerous alliances to this end, particularly in Western Europe and the Middle East. Meanwhile, the Soviet Union actively participated in the spread of Communist movements around the world, particularly in Eastern Europe and Southeast Asia. There were repeated crises such as the Berlin Blockade (1948–49), the Korean War (1950–53), the Vietnam War (1959–1975), and the Soviet-Afghan War (1979–89). The fragility of our world was amply demonstrated, especially in the 1962 Cuban Missile Crisis, when the world came to the brink of a new world war. There were also times when tension was reduced as both sides sought détente. Direct military attacks on rivals were deterred by the potential for ‘mutual assured destruction’ using deliverable nuclear warheads. The Cold War drew to a close in the late 1980s and the early 1990s. With the election of President Ronald Regan, the USA increased diplomatic, military, and economic pressure on the Soviet Union. The Soviet Union, led by the newly-appointed Mikhail Gorbachev, attempted to keep up with the USA by introducing perestroika and glasnost and several internal reforms. Ironically, these reforms
eventually led to the collapse of the Soviet Union in 1991, leaving the USA the only superpower in a unipolar world.

4.1.3 Genesis of the Cold War

There is some disagreement over the time exactly when the Cold War started unfolding. While there is agreement among most historians that it began in the period just after World War II, some argue that it began towards the end of World War I. There is a strong belief that the Cold War was a continuation of the historical tensions and rivalries between two European powerhouses — the Russian Empire and the British Empire — which date back to the middle of the 19th Century. The US was dragged into this old enmity mainly because of the Russian Revolution and the ideological clash between communism and capitalism that surfaced only after Russia emerged as the world’s first communist nation. As discussed earlier, the establishment of Bolshevism in Russia was the major event which made Russian–American relations a matter of major long-term concern to the leaders in each country.

Several events triggered the suspicion and distrust between the United States and the Soviet Union: the Bolsheviks’ challenge to capitalism (through violent overthrow of ‘capitalist’ regimes to be replaced by communism), Russia’s withdrawal from World War I as discussed before, USA’s backing of the White Army in the Russian Civil war, and its refusal to recognise the Soviet Union until 1933.
4.1.4 World War II and Post War Complexities (1939–1947)

During the course of World War II, there was a suspicion among Russians that the British and the USA crafted the war so that its burden turned on the Russian pivot. This Soviet perception of the West engendered a strong undercurrent of tension and hostility between the Allied powers.

The Allies disagreed about how the European map should be drawn, and borders carved out, following the war. The issue of post-war security became a sticking point: there were very dissimilar ideas regarding the institution and maintenance of post-war security. The American concept of security put a strong emphasis on democracy and free markets. The USA argued that, if US-style governments and markets were established as widely as possible, countries could amicably sort out their differences and live peacefully through internationally brokered negotiations, mainly under the umbrella of international organisations. On the other hand, the Soviet model of security critically rested on the integrity of the Russian borders. This reasoning was prompted by Russia’s historical experiences, given the onslaught of invasions of the country from the West over the previous 150 years. In particular, the German invasion of Russia had left a deep scar. The mammoth cost of the invasion on Russia was unprecedented both in terms of death toll — an estimated 27 million Russians perished — and the extent of destruction. Moscow wanted to ensure that the new order in Europe would guarantee the Soviet Union long-term security. The Soviet Union sought security through the elimination of the prospect of a hostile government reappearing along the USSR western border, by directly controlling the governments and people of these buffer countries. Poland became a source of immediate tension: in April 1945, both Churchill and the newly elected
American President Harry S. Truman opposed the Soviet intervention in Poland, and especially the establishment of the puppet Lublin government. At the Yalta Conference in February 1945, the Allies had offered to define the framework for a post-war settlement in Europe but could not reach a firm consensus given the Soviet focus on securing its own boundaries. Following the Allied victory in May, the Soviets swiftly moved into Eastern Europe while USA and Western allied forces remained in Western Europe. There was once again a divided Europe. The division of Germany exemplified the new era of rivalry, suspicion and tensions: in occupied Germany, the USA and the Soviet Union created zones of occupation and a loose framework for four-power control with the fading French and British.

Serious attention was now given to the establishment of world peace through an international agency. The Allies set up the United Nations, but the organisation was bereft of any real power since the enforcement capacity of its Security Council was effectively neutralised by the superpowers’ use of the veto. This created a vacuum in the making of institutions that could actively promote peace by mitigating aggression. To some observers, ‘the UN was essentially converted into a forum for exchanging polemical rhetoric, and the Soviets regarded it almost exclusively as a propaganda tribune’ (Garthoff, 1994).

The British government led by Prime Minister Winston Churchill was alarmed by the enormous size of Soviet forces deployed in Europe at the end of the war. This alarm was further spurred by the perception that Soviet leader Joseph Stalin was unreliable. Immediately after the conclusion of World War II, the British felt the Soviets posed a threat to Western Europe. In April-May 1945, British Armed Forces developed
Operation Unthinkable, the Third World War plan the main purpose of which was ‘to impose upon Russia the will of the United States and the British Empire’ (British War Cabinet). It was rejected by the British Chiefs of Staff Committee as militarily unfeasible, but the stage was set for another bipolar division of Europe and consequently the world, which took the form of the Cold War.

At the Potsdam Conference, starting in late July 1945, serious differences emerged over the future development of Germany and Eastern Europe, and the conference became a verbal and propaganda battlefield for Truman and Stalin. Truman tried to cow Stalin by disclosing the American possession of a nuclear weapon, whilst Stalin defiantly signalled the Soviet march toward the same goal. In February 1946, George F. Kennan’s ‘Long Telegram’ from Moscow helped to form the growing hard line that was being taken against the Soviets, and became the basis for US strategy toward the Soviet Union throughout the rest of the Cold War. At the same time, the Soviet government started taking a similar hard line towards the USA. The Soviet perception of the USA was that the USA was ‘in the grip of monopoly capital building up military capability to prepare the conditions for winning world supremacy in a new war’ (Kydd, 2005).

4.1.5 The Korean War and the First Battlefield after World War II (1947–1953)

By 1947, the presidential advisors of Harry Truman became increasingly preoccupied with Stalin and how to counter the influence of the Soviet Union. It became a common assumption in US politics that Stalin was trying to weaken the position of the USA in the period of post-war rivalry by encouraging, and playing to
competition among, capitalist nations. A few important events rocked the US political mindset during the post-war reconstruction period:

- In Asia, the Red Army came to control Manchuria in the last month of the war and occupied Korea above the 38th parallel.

- Mao Zedong's Communist Party of China, though receiving minimal Soviet support, defeated the pro-Western and heavily American-assisted Chinese Nationalist Party in the Chinese Civil War.

- The USSR propped up puppet communist regimes in Eastern Europe: Bulgaria, Czechoslovakia, Hungary, Poland, Romania, and East Germany; the Red Army kept a military presence and close vigil in most of these countries.

- In February 1947, the British government officially made it clear that it could no longer afford to finance the Greek monarchical military regime in the civil war against communist-led insurgents. Harry Truman openly started discussion on how to contain the spread of communism in Asia and Europe, and described the post-war conflict as a contest between ‘free’ peoples and ‘totalitarian’ regimes. For US policymakers, issues concerning Europe’s balance of power were not necessarily military, but political and economic challenges.
• In June, the Marshall Plan promised economic assistance to reconstruct the Western economic system, thereby challenging the perceived threat of communism in Western Europe.

• To the Soviets, and especially to Stalin, the Marshall Plan came as a significant threat to Soviet control of Eastern Europe. Stalin argued that economic and social integration with the West would make Eastern Bloc countries flourish and thereby pose a threat to its border. He moved to prevent Eastern Bloc nations from receiving Marshall Plan aid. The Soviet Union’s alternative to the Marshall plan, which involved Soviet subsidies and trade with Western Europe, became known as the Molotov Plan and, later, the COMECON. A clear battle line was drawn on European soil, mainly in terms of aggressive economic reconstruction and expansion, which could not hide the break-up of Europe into two hostile camps.

• At the same time, Stalin was apprehensive of a reconstituted Germany, as he desired a post-war Germany of no threat to the Soviet Union. In restraining Western efforts to re-industrialise and rebuild the German economy, Stalin prevented Western materials and supplies from getting to West Berlin, a move which came to be known as the Berlin Blockade — an open propaganda war and conflict without ammunition. This became the first major crisis after World War II.

• The USA formally formed an alliance with Western European states, establishing the North Atlantic Treaty Organisation (NATO) group of
nations. The formal split of Europe was signalled by the detonation of the first Soviet atomic device in 1949, which ended the US supremacy in nuclear warheads. This also initiated a new phase of US-Soviet rivalry, as open conflict became too costly.

• Germany came to be divided into the US-controlled West Germany and the Soviet-controlled German Democratic Republic in 1949, which prompted the re-arming of West Germany by the USA.

• As Europe splintered, the new rivalry quickly spread into Asia, Africa, and Latin America. In South-East Asia, the USA moved to counter revolutionary nationalist movements, often led by Communist parties financed by the USSR, fighting against the restoration of Europe’s colonial empires. In the early 1950s, The USA formalised a series of alliances with Japan, Australia, New Zealand, Thailand and the Philippines, guaranteeing the USA a number of long-term military bases.

One of the more significant impacts of the above confrontation between superpowers was the Korean War. As noted before, the US and the Soviet Union had been fighting proxy wars, on a small scale, and without US troops. Suddenly, to Stalin’s surprise, Truman dispatched US forces to drive back the North Koreans, who had invaded South Korea. This unforeseen action was officially backed by the UN Security Council — because the Soviets had been boycotting meetings in protest over Taiwan and not Communist China being granted a seat. This became one of the events that shook belief in the neutrality of the United Nations and its Security
Council and led to a polarisation between the camps of the two superpowers. The polarisation led to militarisation: NATO developed a military structure, while the communist world rallied behind the North Korea. The Korean War also divided people in individual nations: in Great Britain there appeared a clear division of people who supported the Korean War and people who actively opposed it. Even though the Chinese and North Koreans were frustrated by the enormity and the destructiveness of the war and were ready to end it by late 1952, Stalin insisted that they continue fighting. A cease-fire was approved only in July 1953, after Stalin’s death.

4.1.6 An Era of Crisis after Crisis (1953–1962)

In 1953, changes in political leadership on both sides shifted the dynamics of the Cold War. The warhorses like Stalin and Truman disappeared from the global scene. Dwight D. Eisenhower took over the presidency and the legacy of the US rivalry:

- During the last 18 months of the Truman administration, the US defence budget had quadrupled. It became mandatory for Eisenhower to reduce military spending. He argued that the US’s nuclear superiority was the ultimate weapon against the Soviet Union.

- In March 1953, as Joseph Stalin died, Nikita Khrushchev became the dominant leader of the USSR. His revisionist view of Joseph Stalin’s work is of critical importance: he declared that the only way to reform and move away from Stalin’s policies was by acknowledging errors made in the past.
• By 1956 Khrushchev did a u-turn, threatening to annihilate the West with nuclear weapons and ‘we will bury you’ statements. He tried subsequently to put a polish of economic victory — not nuclear victory — on his statements.

• The Suez crisis demonstrated the nuclear superiority of the USA. The situation in Europe remained like an active volcano — US troops seemed to be stationed indefinitely in West Germany, and Soviet forces throughout Eastern Europe.

• Berlin remained divided and contested. In 1961, the East Germans erected the Berlin Wall to prevent the movement of East Berliners into West Berlin. From 1957 through 1961, Khrushchev constantly threatened the West with nuclear annihilation. He claimed that Soviet missile capabilities were far superior to those of the United States, capable of wiping out any American or European city.

• However, in 1961, Khrushchev rejected Stalin’s belief in the inevitability of war, and declared his new goal to be ‘peaceful coexistence’ with capitalism. He now argued that capitalism would collapse in a peaceful era, and ‘peace’ now became a means to a goal: the triumph of communism and class struggle over capitalism. Importantly, advocating peace as a means to this end provided some leeway to focus upon the crumbling Soviet economy.
• The new era modified the Stalinist Soviet stance, where international class struggle entailed two opposing camps on an inevitable collision course, and where Communism would triumph through global war; now, peace would drive capitalism towards collapse on its own, as well as giving the Soviets the opportunity to boost their military capabilities. However, by the late 1960s, the ‘battle for men’s minds’ between two systems of social organisation was largely over, with distrust and tensions henceforth derived primarily from clashing geopolitical objectives rather than ideology.

• On the nuclear issue the USS and the Soviet Union assumed a position of mutual assured destruction. They pursued nuclear rearmament and developed long-range weapons with which each could annihilate the territory of the other. The rivalry was intense: in August 1957, the Soviets successfully launched the world’s first intercontinental ballistic missile (ICBM), and in October they launched the first earth satellite, SPUTNIK.

• In the late 1950s disagreements between the Soviet Union and China, and various other internal problems, led to a decline in the USSR. The period after 1956 was marked by series of setbacks for the Soviet Union, most notably the breakdown of the Sino-Soviet alliance. Mao had defended Stalin when Khrushchev attacked him in 1956, and hailed the new Soviet leader as a ‘superficial upstart’, accusing him of having lost his ‘revolutionary edge’. Khrushchev attempted to reconcile, and to reconstitute the Sino-Soviet alliance, but Mao stonewalled. Later, the Soviets engaged bitter rivalry with
Mao’s China for leadership of the global communist movement, and the two engaged in military conflicts in 1969.

- The nuclear arms race between the USA and the Soviet Union came close to the possibility of nuclear war and annihilation. Khrushchev formed an alliance with Fidel Castro after the Cuban Revolution in 1959, which posed a direct threat to the USA. In 1962, President John F. Kennedy responded to the Soviet Union installation of nuclear missiles in Cuba with a naval blockade. The Cuban Missile Crisis brought the world closer to nuclear war. It also established the theory that neither superpower was ready to use nuclear weapons for fear of the other’s retaliation, and thus of mutually assured destruction. The resolution of the crisis paved the way for nuclear disarmament and improving relations, although the Cold War’s first arms control agreement, the Antarctic Treaty, had come into force in 1961.

- A new horizon appeared with Mikhail Gorbachev’s ‘new thinking’. This new vision portrayed a peaceful coexistence in the globe as an end in itself rather than a means of class struggle. At the same time, the US visions centred on American strength abroad and the success of liberal capitalism.

- More broadly, one hallmark of the 1950s was the beginning of European integration — a direct spin-off of the Cold War that Truman and Eisenhower promoted politically, economically, and militarily, but which later administrations viewed ambivalently, fearful that an independent Europe would launch a separate détente with the Soviet Union, which would use this
to exacerbate Western disunity. Nationalist movements in some countries and regions, notably Guatemala, Iran, the Philippines, and Indochina were a product of active support from the communist world, or at least were perceived so in the West. In this context, the USA and the Soviet Union increasingly engaged in global rivalry for influence by proxy in the Third World, as decolonisation gained momentum in the 1950s and early 1960s. The US government sought help from the CIA to remove a host of unfriendly Third World governments and support others. The USA used the CIA to overthrow governments suspected of turning pro-Soviet, including Iran’s first democratically elected government under Prime Minister Mohammed Mossadegh in 1953. Between 1954 and 1961, the USA sent economic aid and military advisors to stop the collapse of South Vietnam’s pro-Western regime.

- Many emerging nations of Asia, Africa, and Latin America resisted the pressure to choose sides in the East-West competition. In 1955, at the Bandung Conference in Indonesia, dozens of Third World governments chose to stay out of the Cold War. The consensus reached at Bandung culminated in the creation of the Non-Aligned Movement in 1961. Meanwhile, Khrushchev broadened Moscow’s policy to establish special ties with India and other key neutral states. Independence movements in the Third World transformed the post-war order into a more pluralistic world of decolonised African and Middle Eastern nations and of rising nationalism in Asia and Latin America.
4.1.7 Emergence of Détente (1962–1979)

In the course of the 1960s and 1970s, both the USA and the Soviet Union tried to adjust to a new, more complex pattern of international relations in which the world was no longer divided into two clearly opposed blocs. From the beginning of the post-war period, Western Europe and Japan rapidly recovered from the destruction of World War II and registered strong economic growth through the 1950s and 1960s, increasing their strength compared to the United States. As a result of the 1973 oil crisis, coupled with the growing influence of Third World alignments such as the Organisation of Petroleum Exporting Countries (OPEC) and the Non-Aligned Movement, less-powerful countries had more room to assert their independence and resist pressure from either superpower. Moscow, meanwhile, was forced to turn its attention inward to deal with the Soviet Union’s deep-seated domestic economic problems. During this period, leaders such as Alexei Kosygin and Leonid Brezhnev embraced the notion of détente. On November 13, 1968, during a speech at the Fifth Congress of the Polish United Workers’ Party, Brezhnev outlined the Brezhnev Doctrine, in which he asserted the right to violate the sovereignty of any country attempting to replace Marxism-Leninism with capitalism. The adoption of such a doctrine had to do with the failures of Marxism-Leninism in states like Poland, Hungary and East Germany, which were facing a declining standard of living in contrast with the prosperity of West Germany and the rest of Western Europe.

Both superpowers wanted to reinforce their global leadership. Both the USA and the Soviet Union struggled to stave off challenges to their leadership in their own regions. The USA continued to spend huge sums of money on supporting friendly Third World regimes in Asia. Conflicts in peripheral regions and client states —
most prominently in Vietnam — went on. American President Lyndon B. Johnson sent 575,000 troops to Southeast Asia to defeat the National Front for the Liberation of South Vietnam (NLF) and their North Vietnamese allies in the Vietnam War, but his costly war policy weakened the US economy, and by 1975 the world witnessed a humiliating defeat of the world’s more powerful superpower at the hands of one of the world’s poorest nations. Meanwhile, the Middle East continued to be a source of contention. Egypt, which received the bulk of its arms and economic assistance from the Soviet Union, engaged in both direct and tacit wars against US ally Israel; Syria and Iraq received increased assistance, as did (indirectly) the PLO. During the Yom Kippur War, rumours of imminent Soviet intervention on behalf of Egypt brought about a massive US mobilisation that threatened to break détente. This escalation, the Soviet Union’s first in a regional conflict central to US interests, led to a new and more turbulent stage of Third World military activism and made use of the new Soviet strategic parity. Although indirect conflict between Cold War powers continued through the late 1960s and early 1970s, tensions began to ease as the period of détente began. China tried to improve relations with the USA in order to gain advantage over the Soviets.

4.1.8 The Genesis of the ‘Second Cold War’ (1979–1985)

Historians use the term second Cold War to refer to the period of intense reawakening of Cold War conflicts in the early 1980s, when tensions greatly increased between the major powers and both sides became more militaristic. In December 1979, about 75,000 Soviet troops invaded Afghanistan in order to support the Marxist government formed by ex-Prime-minister Nur Muhammed Taraki, assassinated that September by one of his party rivals. As a result, US President
Jimmy Carter withdrew the SALT II treaty from the Senate and imposed embargoes on grain and technology shipments to the Soviet Union, demanded a significant increase in military spending, and announced that the USA would boycott the 1980 Moscow Summer Olympics. He described the Soviet intervention in Afghanistan as ‘the most serious threat to the peace since the Second World War’.

In 1980, Ronald Reagan defeated Carter in the US presidential election, vowing to increase military spending and confront the Soviets everywhere. Both Reagan and Britain’s new Prime Minister, Margaret Thatcher, denounced the Soviet Union in ideological terms that rivalled those of the worst days of the Cold War in the late 1940s, with the former famously vowing to leave the ‘evil empire’ on the ‘ash heap of history’. Pope John Paul II helped provide a moral focus for anti-communism; a visit to his native Poland in 1979 initiated a religious and nationalist upsurge.

With this background of mounting tensions between the Soviet Union and the USA, and the deployment of Soviet SS-20 ballistic missiles targeting Western Europe, NATO decided, under the impetus of the Carter presidency, to deploy Pershing II and cruise missiles in Europe, primarily West Germany. This deployment would have placed missiles within ten minutes’ striking distance of Moscow. Support for the deployment was wavering; many doubted whether the push for deployment could be sustained. On September 1, 1983, the Soviet Union shot down Korean Air Lines Flight 007, a Boeing 747 with 269 people aboard, when it violated Soviet airspace past the west coast of Sakhalin Island — an act which Reagan termed a massacre. This act galvanised support for deployment, which Reagan oversaw, and stood in place until the accords between Reagan and Gorbachev.
In its bid for global supremacy, Moscow had built up a military that consumed as much as 25 percent of the Soviet Union’s gross national product at the expense of the standard of living of its civilian population. Soviet spending on the arms race and other Cold War commitments both caused and exacerbated structural problems in the Soviet economic system, which saw at least a decade of economic stagnation during the late Brezhnev years.

Soviet investment in the defence sector was not driven by military necessity, but in large part by the interests of politicians and bureaucrats for their own power and privileges. The Soviet armed forces became the largest in the world in terms of the numbers and types of weapons possessed, the number of troops in their ranks, and the sheer size of their military — industrial base. These quantitative advantages were often masked, as the Eastern bloc lagged behind the West in the quality of war machines; but by the early 1980s, the Soviet Union had built up a military arsenal and army surpassing that of the USA. Previously, the USA had relied on the qualitative superiority of its weapons, but the gap had narrowed. Reagan began building up the USA military not long after taking office. This led to the largest peacetime defence buildup in US history. Tensions continued unabated in the early 1980s when Reagan revived the B-1 bomber program cancelled by the Carter administration, produced MX ‘Peacekeeper’ missiles, installed US cruise missiles in Europe, and announced his experimental Strategic Defence Initiative, dubbed ‘Star Wars’ by the media: a defence program to shoot down missiles in mid-flight.
Reagan also imposed economic sanctions on Poland to protest the suppression of the opposition Solidarity movement. Mikhail Suslov, the Kremlin’s top ideologist, advised Soviet leaders not to intervene if Poland fell under the control of Solidarity, as to do so might lead to heavy economic sanctions, a catastrophe for the Soviet Union. Reagan also persuaded Saudi Arabia to increase oil production, even as other non-OPEC nations were doing so. This contributed to the 1980 oil glut, which affected the Soviet Union, as oil was the main source of Soviet export revenue. The decrease in oil prices and large military expenditure gradually brought the Soviet economy to a moribund state.

4.1.9.1 The New Game of Armed Insurgency

US domestic public concerns about intervention in foreign conflicts persisted from the end of the Vietnam War. The Reagan administration emphasised the use of quick, low-cost counterinsurgency tactics to intervene in foreign conflicts: in 1983, the USA intervened in the multi-polar Lebanese Civil War, invaded Grenada, bombed Libya, and backed the Central American Contras, anti-communist paramilitaries seeking to overthrow the Soviet-aligned Sandinista government in Nicaragua. While Reagan’s interventions against Grenada and Libya were popular in the US, his backing of the Contra rebels was controversial.

Meanwhile, the Soviets incurred high costs for their own foreign interventions. Although Brezhnev was convinced in 1979 that the Soviet invasion of Afghanistan would be brief, Muslim guerrillas, aided by many countries (especially the USA), waged fierce resistance. The Kremlin sent nearly 100,000 troops to support its puppet regime in Afghanistan, leading many observers to dub the war ‘the Soviets’
Vietnam’. However, Moscow’s entrapment in Afghanistan was more disastrous for the Soviets than Vietnam had been for the Americans, because the conflict coincided with a period of internal decay and domestic crisis. A senior US State Department official predicted such an outcome as early as 1980, positing that the invasion resulted in part from a ‘domestic crisis within the Soviet system... It may be that the thermodynamic law of entropy has ... caught up with the Soviet system, which now seems to expend more energy on simply maintaining its equilibrium than on improving itself’ (Greenstein, 1998).

4.1.9.2 Apparent End of the Cold War (1985-1991)

By the time Mikhail Gorbachev ascended to power in 1985, the Soviets suffered from an economic growth rate close to zero percent, combined with a sharp fall in hard currency earnings as a result of the downward slide in world oil prices. To restructure the Soviet economy, Gorbachev announced an agenda of economic reform, called perestroika, or restructuring. Within two years, however, he came to the conclusion that fundamental structural changes were necessary. Gorbachev redirected the country’s resources from costly Cold War military commitments to more profitable areas in the civilian sector.

Many US experts initially doubted that Gorbachev was serious about ending the arms race, but the new Soviet leader eventually proved more concerned about reversing the Soviet Union’s deteriorating economic condition than fighting with the West. The Kremlin made major military and political concessions; in response Reagan agreed to renew talks on economic issues and the scaling-back of the arms race. The first talk was held in November 1985 in Geneva, Switzerland. There, Reagan invited
Gorbachev to take a walk to a nearby boathouse and leave their aides. The two men, with only a translator, agreed on a proposal calling for 50 percent reductions of each country’s respective nuclear arsenal.

The second summit was held the following year in Reykjavik, Iceland. Talks went smoothly, except when focus shifted to Reagan’s proposed SDI, which Gorbachev wanted eliminated; Reagan refused. The negotiations ended in failure, but achievements were made at the third summit in 1987 with the signing of the Intermediate Range Nuclear Forces Treaty, which eliminated all nuclear-armed, ground-launched ballistic and cruise missiles with ranges between 500 and 5,500 kilometres (300 to 3,400 miles), and their infrastructure.

This was the first treaty to reduce nuclear arms. The East–West tensions that had reached new heights earlier in the decade subsided through the mid-to-late 1980s. with the year after the final summit in Moscow in 1988, the Soviets officially declared that they would no longer intervene in the affairs of allied states in Eastern Europe: oil and gas subsidies, along with the cost of maintaining massive troop levels, represented an economic drain; and the security advantage of a buffer zone was so reduced that by 1990 Gorbachev consented to German reunification.

In 1989, Soviet forces withdrew from Afghanistan. In December 1989, Gorbachev and Reagan’s successor, George H. W. Bush, declared the Cold War over at a summit meeting in Malta; a year later, the two former rivals were partners in the Gulf War against long-time Soviet ally Iraq. By 1989, the Soviet alliance system was on the brink of collapse, and, deprived of Soviet military support, Communist leaders of
the Warsaw Pact states were losing power; Gorbachev’s ‘Common European Home’ began to take shape when the Berlin Wall itself came down in November, the only alternative (as he later admitted) being a Tiananmen scenario. In the Soviet Union itself, Gorbachev had tried to reform the party to quash internal resistance to his reforms, but in doing so he ultimately weakened the bonds that held the Soviet Union together.

By February 1990, the Communist Party was forced to surrender its 73-year-old monopoly on state power. At the same time, the festering ‘nationalities question’ increasingly led the Union’s component republics to declare autonomy from Moscow, with the Baltic States withdrawing from the Union entirely. At first, Gorbachev’s permissive attitude toward Eastern Europe did not extend to Soviet territory; even Bush, who strove to maintain friendly relations, condemned the January 1991 killings in Latvia and Lithuania, privately warning that economic ties would be frozen if the violence continued. On December 25, 1991, with a growing number of republics, particularly Russia, threatening to secede, the Soviet Union (fatally weakened by an August coup attempt) was declared officially dissolved.

The Cold War was fought globally at an unsustainable cost, over the course of more than four decades. It cost the USA up to $8 trillion in military expenditure, and the lives of nearly 100,000 Americans in Korea and Vietnam. For the Soviets the cost was even higher in terms of the percentage of gross national product. In Southeast Asia, local civil wars were intensified by superpower rivalry, leaving millions dead. After the dissolution of the Soviet Union, the post-Cold War world has come to be
widely considered as a unipolar world, with the USA the world’s sole remaining superpower.

Following the Cold War, Russia had the opportunity to reduce military spending drastically, but the adjustment was sluggish. The military-industrial sector employed at least one of every five Soviet adults, dismantling it left millions unemployed, leading to a steady decline in living standards.

The legacy of the Cold War continues to structure world affairs. The Cold War institutionalised the role of the USA in the post-war global economic and political system. By 1989, the USA was responsible for military alliances with 50 countries, and 1.5 million US troops were posted in 117 countries. The Cold War also institutionalised the commitment to a huge, permanent, peacetime military-industrial complex and large-scale military funding of science. Some of the economic and social tensions that underpinned Cold War competition in parts of the Third World remain dangerously alive. The breakdown of state control in a number of areas formerly ruled by Communist governments has produced new civil and ethnic conflicts, particularly in the former Yugoslavia. In some countries, the breakdown of state control was accompanied by state failure, such as in Afghanistan. In other areas, particularly much of Eastern Europe, the end of the Cold War was accompanied by a large growth in the number of liberal democracies. In areas where the two superpowers waged proxy wars, subsidising local conflicts, many conflicts ended with the Cold War; and the occurrence of interstate wars, ethnic wars, revolutionary wars, or refugee and displaced persons crises declined sharply.
While the explanations of the origins of the conflict in academic discussions are complex and diverse, several general schools of thought can be identified. Historians commonly speak of three differing approaches to the study of the Cold War: ‘orthodox’ accounts, ‘revisionism’, and ‘post-revisionism’.

‘Orthodox’ accounts place the responsibility for the Cold War on the Soviet Union and its expansion into Eastern Europe. ‘Revisionist’ writers place more responsibility for the breakdown of post-war peace on the USA, citing a range of US efforts to isolate and confront the Soviet Union well before the end of World War II. ‘Post-revisionists’ see the events in the Cold War as more nuanced, and attempt to be more balanced in determining what occurred during the Cold War. Much of the historiography on the Cold War weaves together two or all three of these broad categories.

4.1.10 Emergence of the New Era of Globalisation

Globalisation is a multidimensional concept having various important facets that entail economic, financial, technological and social and political processes, which continually transforms the global economy, society and polity. This chapter will focus on seven key aspects of globalisation: trans-border trade, trans-border movement of capital, the emergence of a new international order, diffusion and homogenisation of economic cultures and institutions, labour market consequences, governance issues; and prospects and problems of our global economy and society. The choice of these themes is not fortuitous: they have been chosen to illuminate the complex path that globalisation has trod.
It is generally recognized that the process of globalization has been significantly aided by the fall in the costs of communication and transportation, leading to a shrinkage of our globe into a quasi "global village" characterized by an integration typically observed in traditional village communes. We therefore view globalization as a complex process that gradually unleashes a series of transitions: the process starts off with an increased integration of the world economy through trade and investment networks. It is well understood that the start of this stage of increased integration turns on the pivot of decreasing transaction costs of trans-border trade and investment. Declining transactions costs are explained in terms of technical progress that reduces the cost of communication and transport. Declining transaction costs have a direct and positive impact on cross-border trade and portfolio and direct investment.

The economic consequence of this increased integration is two-fold: first, nations become more interdependent in economic terms. Secondly, there arises a perception that trans-border trade and investment offers tremendous and often unprecedented economic opportunities for a nation. The first transition thus results in an increased integration of the world economy — through a mesh of multinational investment, trade flows and flows of financial capital — with an equally important transition in the perception of the importance of trans-border trade and investment as a vehicle of economic progress and prosperity. The second transition impacts on the realm of national management, as national governments actively respond to this new perception of great benefits to those nations that entertain relevant openness to foreign trade and investment. As a number of nations vie with each other to take home the spoils of the world economy, policy makers come to agree that the main
barrier to the access of these spoils lies in the domestic economic structure characterised by the labyrinth of controls that has been a by-product of the Keynesian era of de-globalisation. This leads to the third transition that paves the way for homogenisation of economic ideologies, convergence of macroeconomic and trade policies, and the consequent adoption of measures of domestic liberalisation. For any national government, options are pretty limited — either it chugs along with the pre-existing regime of economic control with limited global trade as pursued by China and India, or it ditches the olden economy and replaces it with a functional market mechanism, openness to trans-border trade, liberalisation of domestic and external sectors and exchange rates, and privatisation of state-owned enterprises. That the majority of nations had taken the second option represents an unprecedented convergence of economic ideologies during the 1980s and 1990s. This common act of nations, as though to the dictate of a common script, has consolidated the process of integration of the global economy.

The final transition typically takes place in the social and economic spheres of our globe as a direct consequence of these previous transitions. The process of globalisation can thus be reduced to this simple and uncomplicated fable which highlights various, possibly virtuous, transitions lie within a plethora of enormously complicated subplots, without which it is impossible to understand the process, consequences and ramifications of globalisation.
4.2 Global Partnerships in Conflicts and Terrorism: Can there be Endogenously-driven Terror Cycles?

4.2.1 Introduction

Chaotic behaviour can characterise many important facets of economics (Saari, 1996). We now know that complex and unpredictable behaviour is not only a product of complex systems with many degrees of freedom but can also be caused by simple and deterministic dynamic systems. Since the early 1980s a series of important papers has highlighted the relevance of non-linear dynamic models exhibiting chaotic dynamical behaviour in economics (see Benhabib and Day, 1982; Day, 1982; Jensen and Urban, 1984; Hommes, 1991 and 1993). From the previous sections, we formulate terror groups as specific assets which are financed and ‘owned in some sense’ by global/international decision-makers. Like any asset we now postulate a quasi market for terror assets and explore how market equilibrium and equilibrium asset price dynamics will evolve.

In this segment we draw attention to some very complex behaviour that occurs in simple models of equilibrium asset prices in quasi markets that we have postulated. In our quasi market, for each asset there is a group of buyers and a group of sellers. We posit that both buyers and sellers of an asset face a gamble regarding the future value of an asset, related to the unknown element of law enforcement. At the point in time, one can only make honest guesses. In reality, the value of the asset may go up or decline. We derive the asset price dynamics associated with terror activities based on the expected value of this gamble. This example is, in its context, structurally stable although the underlying dynamics are not straightforward. We find that the dynamics of this model are represented by a quadratic map of the type that is well
recognised in the literature on chaos. Although asset price dynamics are completely
deterministic, we show that these dynamics can evolve in a chaotic fashion under a
set of usual parametric restrictions.

4.2.2 Basic Heuristics

Here we posit no fundamental difference between the price of a terror asset and the
value of the terror asset. The price reflects the value completely. At date \( t \) the asset
price can take two values — either a high or a low one. We define the high value as
\((R^N + \Delta_i)\) whilst the probability of its occurrence is \((1 - \lambda)\); and the low value is
\((R^N - \Delta_i)\) and the corresponding probability is \(\lambda\). One may presume that \( R^N \) is the
long-run value/price of the asset and \( \Delta \) represents a short-run deviation from the
long-run value. It is further postulated that the probability of low price \(\lambda\) is
positively related to the magnitude of deviation \(\Delta\) (ignoring the time subscript):

\[
\lambda = \eta \Delta \text{ where } \eta > 0 \text{ and } \Delta \neq 0 \tag{9a'}
\]

(9a’) indicates that the larger the magnitude of deviation from the long-run value/
price, the larger is the probability that the asset price will assume the lower of the two
possible values. We expect to stamp out any irrational exuberance by the assumption
in (9a’).

We call \( V_i \) the expected value of a gamble of holding the terror asset at date \( t \), which
is given as:

\[
V_i = R^N + (1 - \eta R^N)\Delta_i - n\Delta_i^2 \tag{9a}
\]
We postulate that the demand for the asset at date \( t+1 \) \( (D_{t+1}) \) bears a positive relation with the expected value of the gamble at date \( t \) \( (V_t) \):

\[
D_{t+1} = c + dV_t
\]  
(9b)

The assumption (9b) is free of controversies.

We postulate that supply of the asset at date \( t+1 \) \( (S_{t+1}) \) bears a negative relation with the value of the asset at date \( t \) \( (V_t) \):

\[
S_{t+1} = a - bV_t
\]  
(9c)

The assumption (9c) is not too comfortable: as the value of the asset increases, the terror groups find it difficult to supply more units. One way of rationalising the assumption is that the terror groups have finite and fixed needs for financial resources which they can raise with lower floating of the terror asset given the increase in the price/ value of each unit of asset. If equation (9c) is different to what has been postulated, we will need additional conditions to derive our central results.

The excess demand for this asset at date \( t+1 \) is \( X_{t+1} \):

\[
X_{t+1} = (c - a) + (d + b)V_t
\]  
(9d)

The price of the terror asset is assumed to display a finite pace of adjustment as described in

\[
\Delta_{t+1} = KX_{t+1}
\]  
(10a)

\[
\Delta_{t+1} = k(c - a) + k(d + b)V_t
\]  
(10b)
while \( k \) is the speed of price adjustment.

Thus, \( \Delta_{t+1} > 0 \) if \( k(a - c)/(d + b) < V_i \) \hspace{1cm} (10c)

And \( \Delta_{t+1} < 0 \Delta_{t+1} < 0 \) if \( k(a - c)/(d + b) > V_i \) \hspace{1cm} (10d)

Based on these we propose the following lemma:

**Lemma 1**: The dynamics of price of the terror asset is captured by the following difference equation:

\[
\Delta_{t+1} = m - h\Delta_r + A\Delta^2_r \tag{11a}
\]

where

\[ m = k(c - a) - k(d + b)R^N \tag{11b} \]

\[ h = k\left(1 - nR^N\right)(d + b) \tag{11c} \]

\[ A = k(d + b)n \tag{11d} \]

Proof: Substitution of (10b) and (10c) into (11b) yields the result. QED.

**Lemma 2**: The above dynamics has two fixed points \( \Delta^*, \Delta^{**} \):

\[
\Delta^* = \left[ (1 + h) - \sqrt{(1 + h)^2 - 4Am} \right] / (2A) \tag{12a}
\]

\[
\Delta^{**} = \left[ (1 + h) + \sqrt{(1 + h)^2 - 4Am} \right] / (2A) \tag{12b}
\]

\( \Delta^{**} \) is always unstable. \( \Delta^* \) is stable if

\[
\sqrt{(1 + h)^2 - 4Am} < 2 \tag{12c}
\]
Proof: The derivation, being simple, is omitted. QED.

If $\Delta^*$ is stable, then the asset price dynamics (11a) will drive prices to equilibrium if the initial price is close enough as dictated by (12c). If the price at any date $t$ should go beyond $\Delta^{**}$, then this unstable fixed point will cause the asset price to diverge to infinity. Therefore, for the asset prices to be bounded it is imperative that the following is true:

$$\Delta_r < \Delta^{**} = \Delta^{\text{max}} \quad \text{for } t = 0, 1, 2, 3, \ldots \text{ And}$$

$$\Delta_r > \frac{h}{A} - \Delta^{**} = \Delta^{\text{min}} \quad \text{for } t = 0, 1, 2, 3, \ldots$$

(12d) (12e)

Thus, asset prices will be bounded if the initial price lies on the interval $[\Delta^{\text{min}}, \Delta^{\text{max}}]$ and

$$\sqrt{\left[(1 + h)^2 - 4Am\right]} < 3$$

(12f)

If the restrictions on the parameters and initial prices, equations (12d)-(12f) hold, the asset price dynamics remain bounded between $\Delta^{\text{min}}$ and $\Delta^{\text{max}}$. Following Feigenbaum (1978) we now apply the change of variable technique that will transform the non-linear price dynamics to the logistic equation of May (1976).

**Lemma 3:** The quadratic asset price dynamics (11a) are equivalent to the following logistic equation with an appropriate transformation of the variable $\Delta$:

$$P_t = \frac{h(\Delta^{**} - \Delta_r)}{M}$$

(13a)

$$M = 1 + \sqrt{(1 + h)^2 - 4Am}$$

(13b)
Proof: The derivation is omitted. QED.

For $1 < M < 3$ the price converges to the stable equilibrium $\Delta^*$. If $M > 3$ then $\Delta^*$ becomes unstable and the asset prices converge to a stable two-period cycle. As $M$ is increased further the stable period cycles of period $n$ bifurcate into cycles of $2n$. At $M = 3.57$ the asset prices evolve through a cycle of infinite period. The asset prices are within the relevant bounds but they never repeat. For a higher order, the asset prices may look like a random process but they are fully deterministic. For values of $M$ greater than 3.57 we can have even more complex behaviour.

**Result 1:** The asset prices evolve through a cycle of infinite period and hence never repeat themselves if

$$Am > \left[6.60 - (1 + h)^2\right]/4$$  \hspace{1cm} (14a)

As a result, it is not possible for agents to have self-fulfilling expectations.

**Result 2:** In order to place these results in a sharper focus we consider a special case when $R^x = 1/\lambda$; then we know $h = 0$, $A = k(d + b)\lambda$, $m = (c - a) - k(d + b)(1/\lambda)$. Then the chaotic dynamics emerges at

$$(1 + h)^3 - 4Am > 6.60$$  \hspace{1cm} (14b)

The substitution of $h$, $A$ and $m$ will reduce (6b) to
Thus, the chaotic dynamics emerges if the speed of price adjustment is beyond a threshold:

\[ k > k^* = \frac{1.4}{[(d + b)(d + b + \lambda a - \lambda c)]} \]  

(14d)

The price dynamics converges to the stable equilibrium if the speed of price adjustment \( k \) is such that

\[ k < k^{**} = \frac{0.75}{[(d + b)(d + b + \lambda a - \lambda c)]} \]  

(14e)

4.2.3 Observation

It is now well recognised in economics science that chaos cannot be given short shrift as an outcome of highly artificial models. Seemingly innocuous models can exhibit chaotic dynamic behaviour, as confirmed in this chapter. The source of the chaotic behaviour in this chapter is in the series of complicated decisions that economic agents make to buy, or sell, an asset on the basis of the expected value of the proposed gamble involving unknown future (asset) prices. The resultant asset price dynamics do not have sufficient refined properties that may eventually lead to a radical behaviour (Saari, 1996). It is therefore the basic nature of the economic problems that confront decision makers in the asset market that triggers chaotic dynamic behaviour in asset prices. The upshot is that the speed of price adjustment can be a critical factor in determining whether asset price dynamics evolve through a cycle of infinite period. We are able to derive two critical values of the speed of price adjustment \( k^* \) and \( k^{**} \): if the actual speed of price adjustment \( k \) is such that \( k > k^* \) then the asset prices remain bounded but never repeat. Thus the price dynamics
exhibit chaotic dynamical behaviour for $k > k^*$. Asset prices can show time behaviour that is seemingly random but is purely deterministic. In this case, agents fail to make long-run predictions even though they act in a deterministic world. Time profiles that start very close together will separate exponentially. On the other hand, for values of speed of price adjustment $k$ such that $k < k^{**}$, the asset price dynamics converge on a stable equilibrium.
CHAPTER 5

The CMP (Saaty/Isard) Idea and Empirics

5.1 Introduction

The many peace plans (described in Appendix) found little success, but did point out the areas of particular concern for Israelis and Palestinians: the status of Jerusalem, the treatment of refugees, border demarcation, and Israeli settlements in contested territory.

On 11 March 2004, India’s cricketers made a 40-day tour of Pakistan for the first time in 14 years, in a step considered by many as a significant move toward strengthening the fragile peace between the two countries. About 8000 Indian fans travelled to Pakistan to watch the event. On 7 April 2005, two buses crossed the border between the nations: a small but significant event, because it betokened a mutual improvement joint action. The main purpose of such a joint action is to break the ice between two parties and make the ensuing peace process irreversible.

Joint actions work to achieve global stability. Global stability is a position reached when all issues between two countries are regulated peacefully and the probability of war re-escalation between the two countries is so minor that it no longer enters the calculations of the two parties (see figure 5.1a, which shows that the ball remains at bottom always at the end). Local Stability is a state of affairs where a small perturbation of the system does not change the joint status quo position between
belligerent groups (Axelrod, 1990; Newman, 1961) (see figure 5.1b, which indicates that small perturbations can’t move the ball to a different hole).

**Figure 5.1 Global and Local Stability**

1. a. Global Stability

1. b. Local Stability

CMP combines two theoretical tools: First, it uses the prospect theory developed by Kahneman and Tversky (1979), and the related inter-temporal choice theory developed by Ainslie and Herrnstein (1981). Second, it uses the analytical hierarchy process and procedures (AHP) developed by Saaty (1980) and Isard and Azis (1999). CMP is based on three main steps: the first is elicitation and conflict analysis, the second phase in CMP detects local stable positions, and the third phase includes a deliberation process with the concerned groups regarding what kind of joint project would accord with the discovered satisfying position (Moyersoen, 2007).

In this chapter we are searching for an effective intervention in public policy decision making through conflict analysis, using the prospect theory developed by Kahneman and Tversky (1979). Kahneman and Tversky (1979) explored how people take decision in state of affairs involving uncertainty about outcomes. They have found that there is little empirical support for using rational analysis and prescription when taking a decision under uncertainty. For example, in simple situations (like lottery where there is uncertainty about the result) they have found that people think of
consequences as increments (or decrements) to current wealth (current wealth serves as reference points from which changes are made). In addition, when people relate their subjective values with improvements these values drop with size of improvements. For example, the difference between a gain of $100 and a gain of $200 is greater than the subjective difference between a gain of $1100 and $1200 (the same concept works on loss, where the difference between a loss of $100 and a loss of $200 is greater than the subjective difference between a loss of $1100 and $1200).

5.1.1 A Descriptive Foundation for Irrevocable Decisions in Conflict Escalation

An irrevocable decision is a decision that is impossible to revoke, retract or change, which alters the stable status quo in a way that is difficult to forecast, and where the decision maker is faced with a credible risk in time to face important negative consequences of the decision (Luterbacher, 2004). To understand this we will take the Israd-Smith model of conflict escalation to understanding an irrevocable decision between two parties A and B (Figure 5.2). Figure 5.2 describes an argument between A and B on how to divide the burden of a public good project.
The figure carries two best reply lines, one for actor A and the other for actor B. Each point on best reply line A gives the best investment for a given particular outlay of group B for the project (any point on best reply line A would optimise benefits for actor A). Any point on the arc, the efficiency frontier, denotes joint actions that are neither strongly nor weakly dominated by some other joint action. The initial equilibrium position between actor A and B is point $O_1$. If we assume that actor A is an adventurous person who wants to maximise his benefits, he will try to decrease his contributions from $O_1$ to $O_2$ in the project to move closer to his best reply line A. At $O_2$ actor B become poorer compared to $O_1$, so he learns from A and decreases his contributions to move from point $O_2$ to $O_3$, closer to his best reply line B. This
scenario continues until both actors A and B have moved away from an efficient solution (efficient frontier) and become worse off. The irrevocable decision is the decision taken by actor A to deviate from point O₁ to O₂, which is difficult to revoke, retract or change.

5.1.2 Inter-temporal Choice Theory to Identify Local Stable Positions

In view of the fact that actors are myopic in their decision taking, we have to introduce time discounting as a key instrument for conflict deliberation. If one actor intends to bargain for another agreement as an alternative to the planned agreement, he or she is aware that this will hold-up the bargaining course. Altering an agreement needs cautious bargaining, which is a time squandering process that heightens the risk of re-escalation. Utility discounting is intended to include all explanations that reduce one’s expected utility for alternative outcomes, such as bargaining time, changing tastes, uncertainty etc. We presume that alternative agreements engaging insignificant changes from the suggested proposed agreement have to be discounted not more than agreements involving significant changes.

As a result of prospect theory assumptions, in CMP we will apply discounting models in which shorter term has higher discount rates than longer term. Looking at the literature we find three common discounting formulas:

1. \( F(d) = \frac{1}{d} \) (see Ainslie, 1975)

2. \( F(d) = \frac{1}{1 + \alpha d} \) (see Mazur and Hernstein, 1988)

3. \( F(d) = (1 + \alpha d)^{-\beta/\alpha} \) where \( \alpha, \beta > 0 \) (see Loewenstein and Prelec, 1991)
For this chapter we will choose the second model by Herrnstein and Mazur because it is simple, clear, and easy to deploy. To measure the distance between a possible and an alternative position, we will take the absolute difference between the positions for all accounted objectives divided by two (see the formula below).

\[
d(A(x, y, z) \rightarrow B(x', y', z'))
\]

\[
d(A \rightarrow B) = \frac{|x-x'|+|y-y'|+|z-z'|}{2}
\]

Each objective for each party will have a different level of conflict sensitivity factor. The sensitivity factor reflects the degree of sensitivity of each party to a change from their most preferred policy action for a given objective. Sometimes a small change from their most preferred action for an objective may lead to a severe decrease of utility: this kind of objective is a conflict sensitive objective. In a non-conflict sensitive objective, a 10 or 15% change from the most preferred position will not cause a great difference for the actor. As a result, in non-conflict objectives we require low discount rates to trigger preference reversals, and for conflict objectives we need higher discount rates to trigger preference reversals. The lowest discount rate for the non-conflict objectives may trigger preference reversal in such a way that the proposed reference action becomes of greater importance compared to all other policy actions as a credible and stable position for mutual cooperation.

Using the discounting formula and the distance measurement we will be able to determine if the reference position is stable or not. For example, we may have three objectives with reference position for Objective1 = 50%, Objective2 = 25%, and objective3 = 25%. Objectives 1, 2 and 3 are measured on the x-, y-, and z-axes
respectively. We can find the reference position for objective 3 by subtracting objective 1 and objective 2 from 100%. The z-axis shows the level of utile.

As an example we will take three different cases for alpha. First, when alpha is equal to zero. This means there will be no discounting. The reference position is not stable because the actors have alternative beneficiary positions (see figure 5.3).

![Figure 5.3: Reference Dependent Preference Structure alpha=0](image)

Second, when alpha is equal 0.03. As alpha get higher the positions close to the reference position are discounted less than positions further away. The reference position is still unstable (see figure 5.4).
Third, when alpha is equal to 0.07. The reference position is stable. This means the reference position is stable at level alpha equal to 0.07 (see figure 5.5).
This method will discover further possible solutions if we take into consideration more objectives that divide the parties.

5.1.2.1 Identifying Local Satisficing Positions of Conflict in the Middle East

The conflict between Arabs and Israelis is a brutal conflict that has been going for more than 60 years. The conflict between the two involves several key elements such as: struggle over land, Palestinian right of return, the status of Jerusalem, border demarcation, and Israeli settlements in contested territory.

Conflict management procedures are based on four main phases: First, the eliciting phase, second the estimation of the stepwise preference structures, third the detection of stable neighbourhood positions and fourth the deliberation phase (Moyersoen, 2007). (See figure 5.6 for all stages of CMP).
Figure 5.6: Overview of Conflict Management Procedures (CMP)

Phase 1: Elicitation and conflict analysis

1. Identifying the crucial actors and policy objectives
   i. Identifying the crucial actors in the conflict
   ii. Determining the most important objectives for the actors in the conflict
   iii. Identifying which objectives for which actor are costly or beneficial
   iv. Sorting the objectives in coherent categories

2. Eliciting the relative importance of each policy for each actor
   i. Comparing pair-wise the different categories for each actor in the conflict
   ii. Comparing pair-wise the different subsets of objectives within each category for each conflict
   iii. Calculating overall relative importance of each objective for each actor in the conflict

3. Eliciting the sensitivity factors
   i. Eliciting the interval sensitive factor of each objective for each actor
   ii. Eliciting the utility sensitive factor of each objective for each actor

4. Combining the AHP-procedure with the sensitive analysis to estimate the reference step functions for all objectives and actors

Phase 2: Detecting Stable Neighbourhood positions

1. Operationalising the Reference dependent preference structure
   i. Determining the one-parameter hyperbolic discount function
   ii. Operationalising the Reference dependent preference structure

2. Detecting the common stable neighbourhood position
   i. Determining stability levels for each possible allocation bundle
   ii. Selecting the most common robust or stable neighbourhood position

Phase 3: The deliberation phase
5.2 Phase 1: Elicitation and Conflict Analysis

In this phase we will try to determine three main points: first, identifying the crucial actors and major policy objectives in the conflict, second, identifying the relative importance of the objectives and categories for different groups, and finally identifying the sensitivity factor (how crucial each objective is for each party) for each objective for each group.

5.2.1 Identifying the Crucial Actors and Policy Objectives

Before formally meeting any of the participants, we listed 25 main objectives for both parties. In the meeting with the two parties, they identified 18 objectives important in the current conflict between the Arabs and Israelis. In another meeting we sorted these objectives into four different categories: political issues, social issues, economic issues, and social and tourism issues (See Table 5.1).
### Table 5.1: List of Objectives

**List of Objectives**

**A. Political Issues**
1. Establishing diplomatic relations between the two parties
2. Solving the Palestinian refugee problem
3. Israel withdrawal from Arab occupied lands (West Bank, Gaza Strip, Golan Heights and Chiba'a Farms)
4. Recognise and respect each other’s sovereignty, territorial, and political independence
5. Freeze all settlement building including expansion of existing settlements in West Bank and Golan Heights
6. Establish an independent Palestinian State (West Bank and Gaza Strip)
7. Jerusalem becomes an international zone

**B. Security Issues**
8. Make strong and visible efforts to stop individuals and groups from attacking Israel
9. Cut off public funding, private funding, and all other forms of support for individuals and groups engaged in violence against Israel
10. Ensure that Israel stops attacking and using destructive powers against Palestinians and Lebanese
11. Ensure that Israel respects all UN Resolutions

**C. Economic Issues**
12. Terminate Arab economic boycotts of Israel
13. Secure rightful water shares
14. Develop economic mutual cooperation

**D. Social and Tourism Issues**
15. Free access to places of religious and historical significance
16. Reopen and maintain roads and railways
17. Free movement of goods and people
18. Stop propaganda against each other
5.2.1.1 Political Issues

The first objective is establishing diplomatic relations between the two groups. Since its establishment, the State of Israel has suffered from diplomatic isolation and boycotts by Arab countries\(^\text{13}\). Many Arab countries still have no formal diplomatic relations with Israel, but some have established diplomatic relations, including Egypt\(^\text{14}\), Jordan\(^\text{15}\), and Mauritania; Israel also has trade relations with Qatar, Morocco, Tunisia and the Sultanate of Oman\(^\text{16}\).

The second objective is to solve the Palestinian refugee problem. As a result of the 1947 partition plan and 1948 war, the refugee problem has been created (Laqueur, 1968). The third and fourth objective is Israel’s withdrawal from Arab-occupied territories and recognising and respecting each other’s sovereignty, and territorial and political independence (the term ‘occupied territories’ refers to land lost by Arab countries after the 1967 war).

The fifth objective is to freeze all settlements including expansion of existing settlements in West Bank and Golan Heights. These settlements cause disagreement and disputes between the Palestinians and Israelis.

\(^{13}\) There are 34 Arab and non-Arab countries that do not have formal diplomatic relations with Israel today: Afghanistan, Algeria, Bahrain, Bangladesh, Bhutan, Brunei, Chad, China, Comoros, Cuba, Djibouti, Guinea, Indonesia, Iran, Iraq, Kuwait, Lebanon, Libya, Malaysia, Maldives, Mali, Morocco, Niger, North Korea, Oman, Pakistan, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab of Emirates, and Yemen.

\(^{14}\) Egypt has had full diplomatic relation with Israel since signing the Israel-Egypt peace treaty in 1979.

\(^{15}\) Jordan has had full diplomatic relations with Israel since signing the Israel-Jordan peace treaty in 1994.

\(^{16}\) In October 2000, Israeli offices in Morocco, Tunisia and Sultanate of Oman were closed after these three Arab countries suspended their relations with Israel.
The sixth objective is to establish an independent Palestinian State. The State of Palestine on Gaza Strip and West Bank is a proposed country currently controlled by the Palestinian National Authority. This State was declared in Algeria on November 15, 1988 but has never in fact been an independent state, because it has never had sovereignty over any territory. The seventh objective is to make Jerusalem an international zone.

5.2.1.2 Security Issues

For many years, the Middle East region has suffered from instability and insecurity because of continuous Israeli/ Arab conflict. This region is the most militarised region in the world, with one-third of arms imports going to Middle East countries (Bureau of Verification and Compliance, 2000). Given the importance of security issues to Israel, Israel chose to create nuclear weapons. This placed huge pressure on neighbouring states to follow Israel down the nuclear pathway\(^\text{17}\).

This section has four main objectives: first, make strong and visible efforts to stop Lebanese\(^\text{18}\) and Palestinian\(^\text{19}\) individuals and groups from attacking Israel. Second,  

\(^{17}\) Several Arab countries tried through the year to own nuclear weapons such as Iraq and Libya. On September 6, 2007 Israel attacked Syria targeting a partially built nuclear reactor in Northern Syria, near the Turkish border

\(^{18}\) The main Lebanese group that had a direct armed conflict with Israel is Hezbollah. Hezbollah is a Shi'a Islamic organisation founded in the early 1980s in Lebanon during the Lebanese War. Hezbollah had several direct conflict incidents with Israel. The last conflict is the 2006 Lebanon war.

\(^{19}\) A number of Palestinian Liberation movements began to establish in the beginning of the 50s with major objective to create a Palestinian state and destroy Israel. The first organisation to be established was Fatah at the end of 1957, which was founded by a group of Palestinians outside Israel/ Palestine among them was Arafat. Fatah supported and conducted violent attacks against Israel and Israeli citizens in order to achieve its ultimate goal of creating a Palestinian state. Although Fatah was established in the 50s it was only in 1965 when Fatah started carrying out violence attacks inside Israel/ Palestine through its military arm, ‘Al-Asifa’ (the storm) (Cobban, 1984; Alexander and Sinai, 1989). The Palestinian Liberation Organisation (PLO) was founded in June 2, 1964 by the Arab League to represent the Palestinian people. In 1969 the Fatah managed to control the decision-making of the PLO and thus Arafat was appointed as the PLO chairman on February 3, 1969.
cut off public funding, private funding, and all other forms of support for individuals and groups engaged in violence against Israel. Third, ensure that Israel stops using destructive powers against Lebanese and Palestinians. Finally, ensure Israel respects all United Nations Resolutions.

5.2.1.3 Economic Issues

The first objective is the termination of Arab economic boycotts of Israel. After the Israeli declaration of independence in 1948, the members of the Arab League decided a formal boycott: ‘Jewish products and manufactured goods shall be considered undesirable to the Arab countries.’ All Arabs’ ‘institutions, organisations, merchants, commission agents and individuals’ were called upon ‘to refuse to deal in, distribute, or consume Zionist products or manufactured goods.’ (Bard, 2007). The boycott has three levels. The primary boycott forbids all Arab citizens from buying, selling, or entering into a business agreement with Israelis (government or citizens). The secondary boycott forbids all Arab companies to do business with Israel. The tertiary boycott forbids doing business with a company that deals with companies that have an operational base in Israel.

Some states have formally ended the boycott, such as Egypt (1979) and Jordan (1994). Others have established trade offices with Israel, such as Morocco, Tunisia.

Following the 1967 Arab-Israeli war the Popular Front for the Liberation of Palestine movement (PFLP) was established on December 11, 1967. The Popular Democratic Front for the Liberation of Palestine (PDFLP) was founded on February 22, 1969 followed by the establishment of the Palestinian Islamic Jihad (PIJ) in the 70s. The Islamic Resistance movement (HAMAS) was founded in 1988 after the first Palestinian Intifada (Palestinian uprising) with a main goal of establishing an Islamic Palestinian state in place of Israel.

20The Arab League is a regional organisation of Arab States formed in Cairo on March 22, 1945. The current members of the Arab League are: Algeria, Bahrain, Djibouti, Comoros, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab of Emirates, and Yemen.
and the Sultanate of Oman. The Gulf Cooperation Council (GCC) has declared the end of the boycott with Israel, as a step toward peace and regional cooperation in the Middle East (Office of the United States Trade Representative, 2007). One remarkable feature of the Arab-Israeli conflict is that although there is a total lack of interaction between the two parties; yet there is no effective ‘secondary boycott between them (Gleditsch, 1967).

The second objective is to secure rightful water shares between Israel and neighbouring Arab countries. Water resources occupy an important role in the bilateral negotiations of the Middle East. As a result of water scarcity in Israel, Israel has water issues with each of the following neighbouring countries: Syria, Lebanon, Jordan, and the Palestinians (see table 5.2). The only extant water agreement is between Israel and Jordan, signed on 26 October 1994. Syria and Lebanon have no agreements with Israel; there has been armed conflict over water, in particular the Litani River, between Lebanon and Israel.

The third objective is economic mutual cooperation between the two parties. The plan is to exploit the comparative resources of each country by regional cooperation in order to produce competitive products which are beneficial for Israeli and Arab countries.
Table 5.2: Total Water Consumption

<table>
<thead>
<tr>
<th>Country</th>
<th>Annual Renewable Water Resources (Km³/year)</th>
<th>Total Freshwater Withdrawal (Year 2000)</th>
<th>Per Capita Withdrawal (Year 2000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israel</td>
<td>1.7*</td>
<td>2.05</td>
<td>280</td>
</tr>
<tr>
<td>Jordan</td>
<td>0.9**</td>
<td>1.01</td>
<td>177</td>
</tr>
<tr>
<td>Syria</td>
<td>46.1**</td>
<td>19.95</td>
<td>1048</td>
</tr>
<tr>
<td>Lebanon</td>
<td>4.8**</td>
<td>1.38</td>
<td>385</td>
</tr>
</tbody>
</table>

(*) 2001 estimation (**) 1997 estimation

Source: Pacific Institute http://www.worldwater.org/data.html

5.2.1.4 Social and Tourism Issues

Because of continuous instability in the Middle East, there is great volatility in the number of tourists visiting the region. Although the region is rich in highly attractive historical and religious places, instability remains an important factor in determining the number of tourists each year. For example, when there was a kind of stability in Israel at the onset of the peace talks in 1991, Israel experienced an increase in international tourist arrivals (Mansfeld, 1999). After the 2000 Palestinian Intifada, there was a significant fluctuation in the number of tourists arriving in Israel (see figure 5.7).

The first objective is to provide free access to places of religious and historical significance. The second objective is to reopen and maintain roads and railways between Israel and neighbouring countries. The third objective is to establish free movement of goods and people. The final objective is to stop propaganda against each other.
5.2.2 Obtaining the Relative Importance of Each Objective for Both Actors

In this stage we will try to determine the relative importance of each objective for Israelis and Arabs. In order to do this we will use a special scale developed by Saaty (1980). At the first level we started by identifying the relatively more important issues for each objective. We found that political issues were the most important for the Arabs, while security issues were most important for Israelis. At the second level we identified the relative importance of each issue for each actor, using the Saaty scale. This process discovered that for the Arabs the political issues had an importance of 55.55%, the security issues 22.22%, the economic issues 11.11% and the social and tourism issues 11.11%. For the Israelis, the political issues had an importance of 23.08%, the security issues 46.15%, the economic issues 15.38%, and the social and tourism issues 15.38% (see Figure 5.8 and 5.9).
After identifying the relative importance of each issue, we will identify the relative importance for each objective. This procedure will allow us to calculate the relative weight of each objective for each group. The relative weight provides an idea of which objective is important for only one of the parties, and will allow us to estimate preference structures for the two groups in the conflict. The preference structures provide vital information for detecting stable joint positions for cooperation. For example, for the Israelis the objective of recognising and respecting mutual sovereignty, territorial, and political independence (Objective 4) obtained a weight of 0.259. Multiplying this weight by the relative importance of political issue, we get an overall relative weight in percentage terms: 0.259 multiplied by the relative importance of political objective, 23.08%; to give 5.98%. The total relative weights for the 18 objectives for each actor are equal to 100%.

Comparing the relative importance for each objective, we find that for the Arabs the most important three policy objectives are the Palestinian refugee problem (Objective 2), establishing a Palestinian state (Objective 6), and Israeli attacks on Lebanon and the Palestinians (Objective 10). The most important three policy objectives for the Israelis are stopping individuals and groups from attacking Israel (Objective 8), cutting off public and private funding for those groups (Objective 9), and Israel stopping attacking against Lebanon and the Palestinians (Objective 10).

When comparing the relative importance for both actors, we find that there are 5 objectives that are beneficial to both parties (objectives 4, 10, 13, 15, and 18). The total relative weights for these objectives are 29.183% for the Arabs and 27.13% for the Israelis.
Figure 5.8: The Relative Weights of Each Objective for the Arabs

ARABS

A. Political

0.555

B. Security

0.222

C. Economic

0.111

D. Social + Tourism

0.111

-0.1597
-0.1053
0.421
0.3156

-0.273
-0.145
-0.182

OBJ 8
-3.51%
OBJ 9
-2.34%
OBJ 10
9.35%
OBJ 11
7.1069%
OBJ 12
-3.033%
OBJ 13
6.055%
OBJ 14
-2.022%

-0.077
0.205
0.154
0.128
0.154
0.205
0.077

-0.467
-0.267
-0.133
0.133

OBJ 1
-4.28%
OBJ 2
11.38%
OBJ 3
8.555%
OBJ 4
7.11%
OBJ 5
8.555%
OBJ 6
11.38%
OBJ 7
4.26%
OBJ 15
5.188%
OBJ 16
-2.57%
OBJ 17
-1.48%
OBJ 18
1.48%
Figure 5.9: The Relative Weight of Each Objective for the Israelis

ISRAELIS

A. Political

B. Security

C. Economic

D. Social + Tourism

0.2308

0.4615

0.1538

0.1538

0.348

0.348

0.174

-0.13

0.4375

0.375

0.1875

OBJ 8

OBJ 9

OBJ 10

OBJ 11

OBJ 12

OBJ 13

OBJ 14

0.1481

-0.111

-0.074

0.259

-0.111

-0.185

-0.111

OBJ 1

OBJ 2

OBJ 3

OBJ 4

OBJ 5

OBJ 6

OBJ 7

OBJ 15

OBJ 16

OBJ 17

OBJ 16

3.42%

-2.56%

-1.71%

5.98%

-2.56%

-4.27%

-2.56%

4.01%

3.37%

4.68%

3.34%
5.2.3 Eliciting the Sensitivity Factors

After identifying the relative importance for each issue and the relative weight for each objective, the next step is to identify the interval sensitivity factor and the utility sensitivity factor. Those two factors will be used to estimate the preference structure for each actor and for each objective. In this part we will elicit the sensitivity of each policy objective for each actor. We can expect that some objectives are more crucial than others, and that the sensitivity of most objectives differs between parties. The procedure consists of two questions for each objective for each actor.

When making a decision, individuals are faced with two cases: costly or beneficiary. Each actor is asked two questions:

a. How large should the concession be in percentage, from its most preferred position of the given policy objective before you perceive the decrease as a significant loss in utility? (see figure 5.10).

Figure 5.10: Identifying How Large a Concession be in Percentage
Table 5.3 shows the revealed interval sensitive factors for the two groups for the 18 objectives. As long as the policy is delivering 80% or 90% as an alternative of 100, it does not really matter for the actor the policy delivery is perceived as adequate.

<table>
<thead>
<tr>
<th>Policy Objectives</th>
<th>ARABS</th>
<th>ISRAELIS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Interval Sensitivity Factor</td>
<td>Utility Sensitivity Factor</td>
</tr>
<tr>
<td>Objective 1</td>
<td>60%</td>
<td>10</td>
</tr>
<tr>
<td>Objective 2</td>
<td>10%</td>
<td>90</td>
</tr>
<tr>
<td>Objective 3</td>
<td>5%</td>
<td>100</td>
</tr>
<tr>
<td>Objective 4</td>
<td>20%</td>
<td>50</td>
</tr>
<tr>
<td>Objective 5</td>
<td>20%</td>
<td>80</td>
</tr>
<tr>
<td>Objective 6</td>
<td>5%</td>
<td>100</td>
</tr>
<tr>
<td>Objective 7</td>
<td>20%</td>
<td>40</td>
</tr>
<tr>
<td>Objective 8</td>
<td>10%</td>
<td>5</td>
</tr>
<tr>
<td>Objective 9</td>
<td>30%</td>
<td>10</td>
</tr>
<tr>
<td>Objective 10</td>
<td>5%</td>
<td>80</td>
</tr>
<tr>
<td>Objective 11</td>
<td>10%</td>
<td>50</td>
</tr>
<tr>
<td>Objective 12</td>
<td>20%</td>
<td>10</td>
</tr>
<tr>
<td>Objective 13</td>
<td>20%</td>
<td>40</td>
</tr>
<tr>
<td>Objective 14</td>
<td>30%</td>
<td>5</td>
</tr>
<tr>
<td>Objective 15</td>
<td>30%</td>
<td>20</td>
</tr>
<tr>
<td>Objective 16</td>
<td>20%</td>
<td>10</td>
</tr>
<tr>
<td>Objective 17</td>
<td>30%</td>
<td>10</td>
</tr>
<tr>
<td>Objective 18</td>
<td>20%</td>
<td>20</td>
</tr>
</tbody>
</table>

(*) Most preferred position is equal to 100 utils.

After calculating the elicited sensitivity factors for each policy objective, we need to estimate the subsequent interval sensitivity ratio. Multiplying the initial interval level with the interval sensitivity factor will give us the interval sensitivity ratio for the policy objective. For example, take objective 10 for Arabs and Israelis. In table 5.3 we can see that the Arabs have a 5% interval sensitivity factor for objective 10, while the Israelis have a 40% interval sensitivity factor for same objective. Looking at table 12, we see that the initial discrete level is 100% investment. If we take 5% of 100 we find the interval sensitivity ratio for the first interval, equal to 5. Consequently the
The dimension of the interval is from 100% to 95% and the initial interval level of the second discrete interval is 95.

### Table 5.4: Estimating the Subsequent Interval Sensitivity Ratio for Arabs (Objective 10)

<table>
<thead>
<tr>
<th>Discrete Endowment Intervals</th>
<th>Initial Interval Level</th>
<th>Interval Sensitivity Factor</th>
<th>Interval Sensitivity Ratio</th>
<th>Dimensions of the Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>5%</td>
<td>5</td>
<td>100-95</td>
</tr>
<tr>
<td>2</td>
<td>95</td>
<td>Relative to initial interval level</td>
<td>4.75</td>
<td>95-90.25</td>
</tr>
<tr>
<td>3</td>
<td>90.25</td>
<td>4.5125</td>
<td>90.25-85.74</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>85.7375</td>
<td>4.28688</td>
<td>85.74-81.45</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>81.4506</td>
<td>4.07253</td>
<td>81.45-77.38</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>77.3781</td>
<td>3.8689</td>
<td>77.38-73.51</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>73.5092</td>
<td>3.67546</td>
<td>73.51-69.83</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>69.8337</td>
<td>3.49169</td>
<td>69.83-66.34</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>66.342</td>
<td>3.3171</td>
<td>66.34-63.02</td>
<td></td>
</tr>
</tbody>
</table>

### Table 5.5: Estimating the Subsequent Interval Sensitivity Ratio for Israelis (Obj. 10)

<table>
<thead>
<tr>
<th>Discrete Endowment Intervals</th>
<th>Initial Interval Level</th>
<th>Interval Sensitivity Factor</th>
<th>Interval Sensitivity Ratio</th>
<th>Dimensions of the Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>Relative to initial interval level</td>
<td>40%</td>
<td>100-60</td>
</tr>
<tr>
<td>2</td>
<td>60</td>
<td>24</td>
<td>60-36</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>36</td>
<td>14.4</td>
<td>36-21.6</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>21.6</td>
<td>8.64</td>
<td>21.6-12.96</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>12.96</td>
<td>5.184</td>
<td>12.96-7.78</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>7.776</td>
<td>3.1104</td>
<td>7.78-4.67</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>4.6656</td>
<td>1.86624</td>
<td>4.67-2.8</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2.79936</td>
<td>1.11974</td>
<td>2.8-1.68</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1.67962</td>
<td>0.67185</td>
<td>1.68-1.01</td>
<td></td>
</tr>
</tbody>
</table>

---

165
b. What is the percentage loss in utility if a significant concession (answer to question a) occurs, from its most preferred position for a given policy objective? (See figure 5.11).

Figure 5.11: Identifying Loss in Utility

The answer to this question measures the drop in utility for each objective in percentages (where the most preferred position is 100 utils). If the policy objective is of great importance, then the drop in utility will be comparatively large. On the other hand, if the policy objective has low importance then the drop in utility will be relatively small (see tables 5.6 and 5.7).
Table 5.6: Estimating Utility Levels for Arabs (Objective 10)

<table>
<thead>
<tr>
<th>Discrete Endowment Intervals</th>
<th>Dimensions of the Interval</th>
<th>Utility Sensitivity Factor</th>
<th>Utility Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100-95</td>
<td>-80</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>95-90.25</td>
<td>Constant</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>90.25-85.74</td>
<td>utility sensitivity factor</td>
<td>-60</td>
</tr>
<tr>
<td>4</td>
<td>85.74-81.45</td>
<td>-140</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>81.45-77.38</td>
<td></td>
<td>-220</td>
</tr>
<tr>
<td>6</td>
<td>77.38-73.51</td>
<td></td>
<td>-300</td>
</tr>
<tr>
<td>7</td>
<td>73.51-69.83</td>
<td></td>
<td>-380</td>
</tr>
<tr>
<td>8</td>
<td>69.83-66.34</td>
<td></td>
<td>-460</td>
</tr>
<tr>
<td>9</td>
<td>66.34-63.02</td>
<td></td>
<td>-540</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

Table 5.7: Estimating Utility Levels for Israelis (Objective 10)

<table>
<thead>
<tr>
<th>Discrete Endowment Intervals</th>
<th>Dimensions of the Interval</th>
<th>Utility Sensitivity Factor</th>
<th>Utility Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100-60</td>
<td>-10</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>60-36</td>
<td>Constant</td>
<td>90</td>
</tr>
<tr>
<td>3</td>
<td>36-21.6</td>
<td>utility sensitivity factor</td>
<td>80</td>
</tr>
<tr>
<td>4</td>
<td>21.6-12.96</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>5</td>
<td>12.96-7.78</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>6</td>
<td>7.78-4.67</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>4.67-2.8</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>8</td>
<td>2.8-1.68</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>9</td>
<td>1.68-1.01</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

5.2.4 Estimating the Preference Step-function

After finding the utility levels and the relative weight, we can estimate the preference step-function for all objectives for both actors. Since objectives vary in importance for each actor, we should normalise the utility levels for each objective based on its importance. For example, the relative weight of objective 10 for the Arabs is 9.35% and the utility levels are found in table 5.6. To find the preference step function we
need to adjust each utility level according to the objective weight (see tables 5.8 and 5.9).

Table 5.8: Estimating Preference Step-function for the Arabs (Objective 10)

<table>
<thead>
<tr>
<th>Discrete Endowment Intervals</th>
<th>Dimensions of the Interval</th>
<th>Utility Level</th>
<th>Relative Weight</th>
<th>Normalise Utility Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100-95</td>
<td>100</td>
<td>9.35%</td>
<td>9.35</td>
</tr>
<tr>
<td>2</td>
<td>95-90.25</td>
<td>20</td>
<td>1.87</td>
<td>1.87</td>
</tr>
<tr>
<td>3</td>
<td>90.25-85.74</td>
<td>-60</td>
<td>-5.61</td>
<td>-5.61</td>
</tr>
<tr>
<td>4</td>
<td>85.74-81.45</td>
<td>-140</td>
<td>-13.09</td>
<td>-13.09</td>
</tr>
<tr>
<td>5</td>
<td>81.45-77.38</td>
<td>-220</td>
<td>-20.57</td>
<td>-20.57</td>
</tr>
<tr>
<td>6</td>
<td>77.38-73.51</td>
<td>-300</td>
<td>-28.05</td>
<td>-28.05</td>
</tr>
<tr>
<td>7</td>
<td>73.51-69.83</td>
<td>-380</td>
<td>-35.53</td>
<td>-35.53</td>
</tr>
<tr>
<td>8</td>
<td>69.83-66.34</td>
<td>-460</td>
<td>-43.01</td>
<td>-43.01</td>
</tr>
<tr>
<td>9</td>
<td>66.34-63.02</td>
<td>-540</td>
<td>-50.49</td>
<td>-50.49</td>
</tr>
</tbody>
</table>

Table 5.9: Estimating Preference Step-function for the Israelis (Objective 10)

<table>
<thead>
<tr>
<th>Discrete Endowment Intervals</th>
<th>Dimensions of the Interval</th>
<th>Utility Level</th>
<th>Relative Weight</th>
<th>Normalise Utility Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100-60</td>
<td>100</td>
<td>8.03%</td>
<td>8.03</td>
</tr>
<tr>
<td>2</td>
<td>60-36</td>
<td>90</td>
<td>7.227</td>
<td>7.227</td>
</tr>
<tr>
<td>3</td>
<td>36-21.6</td>
<td>80</td>
<td>6.424</td>
<td>6.424</td>
</tr>
<tr>
<td>4</td>
<td>21.6-12.96</td>
<td>70</td>
<td>5.621</td>
<td>5.621</td>
</tr>
<tr>
<td>5</td>
<td>12.96-7.78</td>
<td>60</td>
<td>4.818</td>
<td>4.818</td>
</tr>
<tr>
<td>6</td>
<td>7.78-4.67</td>
<td>50</td>
<td>4.015</td>
<td>4.015</td>
</tr>
<tr>
<td>7</td>
<td>4.67-2.8</td>
<td>40</td>
<td>3.212</td>
<td>3.212</td>
</tr>
<tr>
<td>8</td>
<td>2.8-1.68</td>
<td>30</td>
<td>2.409</td>
<td>2.409</td>
</tr>
<tr>
<td>9</td>
<td>1.68-1.01</td>
<td>20</td>
<td>1.606</td>
<td>1.606</td>
</tr>
</tbody>
</table>

5.2.5 Sensitivity Analysis

At this stage we will plot the objectives where the x-axis indicates the interval sensitivity factor and the y-axis indicates the utility sensitivity factor (see figures 5.13 and 5.14). For the Arabs, objectives 3 and 6 are the most sensitive issues,
followed by objectives 2 and 10. The Israelis are highly sensitive toward objective 8, followed by objectives 9 and 6. This means that the Arabs are highly sensitive toward the Israeli withdrawal from Arab occupied lands and declaring a Palestinian state; they will not be willing to make many concessions. For the Israelis, stopping individuals and groups from attacking Israel are perceived as the most sensitive, least negotiable, issues.

5.3 Phase 2: Detecting Stable Neighbourhood Positions

In this stage, CMP estimates reference dependent preference structures using the Mazur and Hernstein 1988 discounting model for each possible reference position for agreement. This reference dependent preference structure will direct the CMP to discover common stable neighbourhood positions. There are two steps in this phase: determining the stability level and detecting common stable positions.

5.3.1 Determining Stability Level

CMP assumes that actors will move away from a proposed cooperative arrangement to another option, based on either the new position giving a higher utility than the old position, or the risk assessment of expensive delay whilst switching the reference position for an alternative. Positions involving larger alteration will be discounted by a lower average discount rate when compared with positions involving smaller alterations (see Mazur and Hernstein, 1988). The discount parameter will indicate the stability level where the reference position becomes the most beneficial position. We will test all possible joint actions to reach the stable neighbourhood position with the highest level of stability.
To test all possible joint actions for Arabs and Israelis, we will use Matlab software. There are 18 objectives for each actor, which means that there are 816 possible combinations involving three distinct policy objectives. We will also test robustness for every possible combination (2550 allocation for each possible combination). This means we will test 4,161,600 different positions using Matlab software.

The result of the Matlab run illustrates the best ten feasible allocation bundles where allocation positions are stable for both Arabs and Israelis. Table 5.10 demonstrates the result of the Matlab run; the second, third and fourth columns illustrate the combination bundle of policy objectives. Columns five, six and seven indicate the relative weights for each objective. Columns eight and nine show the utile levels for each group under the given allocation positions. The subsequent three columns indicate the stability for each allocation bundle (lower alpha means more stable, which means lower incentives to shift to an alternative position). The best bundle consists of an investment of 4% recognition and respect of mutual sovereignty, territorial, and political independence, 28% for securing equitable water shares, and 68% for promoting free access to places of religious and historical significance. This bundle is the best when compared to others as it has the lowest alpha. All three objectives were previously identified by both Arabs and Israelis as beneficiary objectives.
Figure 5.12: Common Stable Neighbourhood Position for Arabs

Utility

OBJ. 4

OBJ. 13

OBJ. 15 = 100 - (OBJ. 4 + OBJ. 13)

Figure 5.13: Common Stable Neighbourhood Position for Israelis

Utility

OBJ. 4

OBJ. 13

OBJ. 15 = 100 - (OBJ. 4 + OBJ. 13)
<table>
<thead>
<tr>
<th>Combination Policy Objectives</th>
<th>Weight of Each Policy Objective</th>
<th>Utility</th>
<th>Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>6</td>
<td>9</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>9</td>
<td>11</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
<td>10</td>
<td>11</td>
</tr>
</tbody>
</table>

5.4 Phase 3: The Deliberation Stage

Selecting the most common robust or stable neighbourhood position brought us to the following peace proposal:

1. Agreement between Arabs and Israelis about promoting free access to places of religious and historical significance: for example, declaring Jerusalem as a place to be accessed freely by Israelis and Arabs.

2. Establishment of a water reallocation agreement to include Israel, Palestine, Jordan, Lebanon, and Syria.

3. Declaration of a celebratory day in recognition and respect of each other’s sovereignty, territorial, and political independence.
5.5 Conclusion

This chapter proposes a possible participatory conflict management procedure (CMP) that aspires to discover stable points for collaboration between confrontational parties. Stable points are mutual joint cooperative arrangements that diminish the probability of conflict re-escalation. We apply prospect theory developed by the Tversky School, and inter-temporal choice theory developed by Ainslie and Herrnstein, to assert the assumptions in the model.

The CMP process consists of four phases: indicating the crucial actors, objectives of each actor and the relative importance of each objective for the different actors; detecting local stable positions; embracing a certain process with the different actors about what sort of joint project would be coherent with the detected satisfying position; and finally reaching several crucial objectives for both parties. MATHLAB (version 7, release 14) is used to verify the stability of all possible joint actions among the conflicting parties. The stable position detected by CMP consists of an investment of 4% for recognition and respect of mutual sovereignty, territorial, and political independence, 28% for securing rightful water shares, and 68% for promoting free access to places of religious and historical significance.
CHAPTER 6

THE BETA-INDEX AND BETA-MOBILITY IDEA AND

EMPIRICS

6.1 A New Index of Global Roots of Local Conflicts, or International
Tension: The $\beta$ Index/ Indicator of Conflicts

6.1.1 Basics

The purpose of this section is to understand how to evaluate and measure the risk of conflict for an individual country, which is linked to international tensions (see Abolfathi, 1978 for the concept): in other words, how to measure to what extent local conflict in a country is driven by international tension/ global factors. For modelling’s sake, we propose the following:

**Assumption 1:** Conflicts in a country/ region are created and undertaken by a group of local agents. It is like organising a terror attack. Thus, conflict in our model is akin to terrorist attacks and armed insurgency on a local/ regional target. We call the group a terror group.

**Assumption 2:** We assume that there is a national/ regional government that tries to prevent this local conflict either by enforcing existing law, or by offering economic incentives. We call the law enforcement authority the law maker.
The above two assumptions can be sustained from the standard model of an arms race between nations as expounded and developed by Intriligator and Britto (1985). Instead of a terror group and a law maker, they have two nations engaged in conflict.

Assumption 3: We take the technology of a terror attack as given. We also assume the technology of law enforcement as given.

Assumption 4: We assume that the terror group needs both financial resources and technological and logistic resources in order to carry out the terror strike, or conflict. The terror group depends on an international group/ country/ organisation for these resources. In a similar vein, the lawmaker needs resources, technology and information that they can raise locally in part, and receive in part from an international group/ country/ organisation.

Assumption 5: The world is split into two or more rival groups, and for each nation/ region the terror group and law makers receive help from distinct rival groups consisting of many agents, or decision-makers. The spilt of a nation into rival groups (terrorist groups and law enforcers) is partly a product of international tension, or international rivalry.

Assumption 6: For ease of handling, we focus only on the decisions by rival (international) groups to fund terrorist activities. We do not model the funding of the law maker, which we take as a datum.
Thus, in our model there are many decentralised decision-makers at the global level who belong to rival groups and sponsor a set of terrorist activities with the ultimate end of reducing the influence of their rival group. The other group’s members behave in a similar vein. It is like a re-enactment of the Cold War, which relies on of continuing international tension between rival global players/ groups.

At the micro level, for each decision-maker the question is how to allocate their resources, or assets, to alternative terrorist groups located in different nations across the globe. The goal for these decision-makers is to get a return from any terror attack sponsored by them. The cost is the resource cost as well as the risk of losing/ wasting scarce resources, either because the terror attack is foiled by the relevant law maker, or because the local agents divert the resources for their personal use — the classic case of moral hazard.

Our model therefore portrays conflicts as the following: there are several production units of terror attacks in each country of our world. The funding, logistics and technology are provided by global financiers (or players) who are the relevant decision-makers in our model. Actual conflicts are carried out by foot soldiers — mostly as terror attacks or open insurgencies. These terror attacks can range from a simple demonstration to actual warfare. The higher the casualties from an attack, the greater are the return for the global financiers/ decision-makers.

The following axioms are necessary for characterising behaviour of the global financiers/ decision-makers:

\[ Axiom \ 1: \text{Decision-makers are risk-averse} \]
**Axiom 2**: There are homogenous expectations about returns from conflicts. Returns are (jointly) normally distributed.

**Axiom 3**: There is a risk-free return from terror attacks/ conflicts in a country or hypothetical country.

The country can be a forgotten part of our world, say Timbuktu or a desert in Afghanistan before the USA attacked the country, where law enforcement is virtually non-existent and moral hazard is zero. However, the return from the attack is low to zero given the cost of organising it. This is a hypothetical nation/ region, which may be derived from global data. Alternatively, one can argue that the risk-free rate is the return from ‘verbal bashing’, similar to the idea of cheap talk as introduced by Murshed and Cuesta (2008).

**Axiom 4**: For decision-makers there is perfect divisibility of resources. This is just an abstraction.

**Axiom 5**: Frictionless and costless information about terror units is available to all terrorists/ decision makers at a point in time.

**Axiom 6**: For each decision-maker, investing in a terror unit is akin to investing in an asset. Hence, the decision to invest in different terror units is like holding a portfolio of assets.
An example: Suppose there are 2 countries and each country has 2 terror units. Suppose \( E(R_1) \) and \( E(R_2) \) are the expected returns from these distinct units; \( \text{Var}(R_1), \text{Var}(R_2) \) and \( \text{Cov}(R_1, R_2) \) are the variances and covariance. We assume that \( R_1 \) and \( R_2 \) are random returns and suppose \( w_1 \) and \( w_2 \) are the percentages of a portfolio invested in two terror assets; the expected return from a portfolio \( E(R_p) \) is:

\[
E(R_p) = w_1 E(R_1) + (1 - w_1) E(R_2)
\]  

(1a)

The variance of the portfolio is

\[
\text{Var}(R_p) = w_1^2 \text{Var}(R_1) + (1 - w_1)^2 \text{Var}(R_2) + w_1 (1 - w_2) \text{Cov}(R_1, R_2)
\]

(1b)

where \( \text{Var} \) is variance and \( \text{Cov} \) is covariance.

Observation 1: The risk-return trade-off, available to a decision-maker, is given by the bullet AB in figure 6.1. The minimum variance opportunity set is the locus of risk and return combinations offered by the portfolio’s risky assets, which yield the minimum variance for a given return rate.
Axiom 6: The goal of a typical decision-maker in our model is to maximise the utility from the expected return and variance of portfolios given the risk-return trade-offs.

If there are no risk-free assets, optimal portfolios are determined by the point of tangency between the minimum variance opportunity set and the indifference curve involving risk and return.

6.1.2 Global Portfolio of Terror Assets

If the global decision makers are rational and have homogenous information, the chosen portfolio must be at the upper half of the opportunity set AB. They will choose different points on the opportunity set if they have different degrees of risk-tolerance. If each decision maker chooses an efficient portfolio, the overall/ global
portfolio will also be efficient. Note that if global decision makers have non-homogenous decisions, there is no reason to believe that the global portfolio of terror assets will be efficient.

6.1.3 The Efficiency of the Global Portfolio

In order to simplify the situation, let us draw the efficient portfolio in Diagram 6.2:

Note that the point of tangency between the indifference curve of the global decision-maker and the minimum-variance opportunity set, point E, gives the equilibrium choice of one decision-maker.
6.1.4 Derivation of Market Beta as a Measure of Risk of Conflict due to International Tension

If a global decision-maker puts a% of his resources in a country-specific asset I and (1-a%) in the global portfolio, which consists of terror activities all across the globe, the average return from this portfolio and the variance of the portfolio are known to be functions of the expected returns, and the variance of asset I and the variance of the global portfolio and the co-variance between asset I and the global portfolio \( R_G \). The slope of the opportunity set AB can be shown to be equal to:

\[
\frac{Var(R_G)^{1/2} \left[ E(R_I) - E(R_G) \right] \left[ Cov(R_I, R_G) \right]}{\left[ Cov(R_G, R_G) \right]} = \left( \frac{IB}{R_G} \right)
\]

where \( R_I \) is the return from asset I, \( R_G \) is the return from the global portfolio, \( E(\cdot) \) is the expectation operator, \( Var(R_G) \) is the variance of the global portfolio, \( Cov(R_I, R_G) \) is the covariance between return from asset I and the return from the global portfolio G.

If there is a risk-free rate, which is similar to just spending resources on ‘bad-mouthing’ the rival as explained by Abolfathi (1978) in the context of international tension, we can derive the line, similar to the security market line, joining the global portfolio and the risk-free rate. The slope of the constraint line will be:

\[
\frac{E(R_G) - R_f}{Var(G)^{1/2}} \quad (IB)
\]

where \( R_f \) is the risk-free rate.
The equalisation of (IA) and (IB) in equilibrium gives us

\[ E(R_i) = R_f + \left( E(R_g) - R_f \right) \beta_i \]  \hspace{1cm} (IC)

where \[ \beta_i = \frac{\text{Cov}(R_i, R_g)}{\text{Var}(R_g)} \]  \hspace{1cm} (ID)

Note that the beta index measures the relative variance of the country-specific terror asset I with respect to the return from the global portfolio of terror asset. If the beta value of a country is greater than 1, the country’s terror activities, or conflicts, are more sensitive to global terror activities and the country is more exposed to global or international tensions. On the other hand, if a country’s beta value is less than 1, the country is less susceptible to international tensions.

In the following we try to capture the value of beta for several nations for which we have data by assuming the return from conflicts to a terror group are equal to actual number of victims from conflicts in the relevant country.

6.2 Empirical Foundation of $\beta$ Index of Conflicts due to International Tension

Before undertaking the empirical study let us explain the beta index of conflict due to global tension in terms of an artificial construct that closely resembles the data that we will use. Suppose there are 3 countries for which we have data on conflicts, mainly victims of conflicts, \( n_{ij} \) for country \( i \) in year \( j \) (we will describe the data soon) for 5 years that we present in the following table:
Table 6.1: Measuring Beta Risk of Conflict— a Hypothetical Case

<table>
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<tr>
<th>Country 1</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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Average

<table>
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<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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<tbody>
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<td>N_{2}</td>
<td>N_{3}</td>
<td>N_{4}</td>
<td>N_{5}</td>
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</table>

Note that $N_j$ is the global average of conflict in year $j$.

The beta indicator of conflict in country $i$ due to global tension is estimated by regressing $n_{ij}$ on $N_j$:

$$n_{ij} = a_i + \beta_i N_j$$

(IE)

The fundamental notion of (IE) is to estimate the percentage change in conflict incidents in a country due to a percentage change in conflict incidents at the global level.

6.2.1 Data Type and Data Source

The data used in this study is from ICPSR 4586 armed conflict study (Inter-University Consortium for Political and Social Research)\textsuperscript{21}. This study of armed conflict includes wars, civil wars, coups, secessions, rebellions, revolts, revolutions, ethnic and political violence. This dataset is composed of terrorist events recorded for the entire world from 1970 and 1997. An extension of this database has been done to cover the period between 1997 and 2004. This data was originally collected

by Pinkerton Global Intelligence Service (PGIS). Throughout the data collection period PGIS employed a broad definition of terrorism: the threatened or actual use of illegal force and violence to attain a political, economic, religious, or social goal through fear, coercion, or intimidation. The data include ‘terrorist groups’ identified as specific named groups as well as generic groupings like ‘rebels’ or ‘student protestors’. The data in this collection contain nearly 70,000 events. Variables provide group name, type of terrorist incident, incident date, region, country, state in the United States (if applicable), city, and location in which the attack occurred, the nature of the target, the identity, corporation, and nationality of the target (up to four targets), type of weapons used (up to four weapon types), whether the incident was considered a success, the amount of damage, and more narrowly, the amount of United States damage. Further variables classify the number of terrorists involved (total, male, female), type of vehicle involved, total number killed (persons, United States nationals, terrorists), and total number wounded (persons, United States nationals, terrorists). Further variables provide information about kidnappings (total, United States nationals), total number of days and hours held, and amount of ransom demanded and amount paid (overall, United States nationals). Variables also record information about hostages (total, United States nationals), about robberies (total property, United States property), and about hijackings (origin, where diverted, status of victims, and number of victims released). Finally, several administrative variables provide the data source, legibility of the data card, and if the incident was verified by a third party.

The main data used in this chapter is the number of incidents and the number of people killed for each country. The Beta index is the slope of simple linear regression
between the independent variable $Y_i$ (the number of incidents) and the dependent variable $X_i$ (the number of people killed).

$$Y_i = a + \beta_i X_i$$ \quad (1F)

### 6.2.2 Observed Values of Beta Index for Nations

In Table 6.2 we offer the beta values of 92 nations for which we have data from 1970–2004. Over this period, India is the country with the highest risk because of international ideological tension, while New Zealand and Fiji had the lowest such risks. A few quick observations are in order: first, 57 (61%) out of 92 nations display violent conflicts due to international tension during 1970-2004. Their beta index has a value in excess of 1. Secondly, at the top end, we see countries from the developing world and Africa, and countries with significant ethnic polarisation, like South Africa and Turkey. There is reason to believe that their internal conflicts have been exacerbated by international tensions. Possibly the developing world became the region of contest between superpowers for influence-peddling. Finally, it is interesting to note that at the bottom end, we have countries mainly from the developed world and the communist world, where global tensions failed to reach either because of firm commitments to their respective ideologies, or because conflicts were kept at bay.
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<thead>
<tr>
<th>Country</th>
<th>Beta</th>
<th>Country</th>
<th>Beta</th>
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6.2.3 Further Tables and Figures on Beta Index: Beta Instability

Table 6.3: Estimates of Beta Values from 1970-1982

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Table 6.4: Estimates of Beta Values from 1983-1991

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### Table 6.5: Estimates of Beta Values from 1992-2004

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6.2.4 Examining the Change in Beta during Three Different Time Periods

The figures below examine the change of Beta ($\beta$) during three different time periods: 1970–1982, 1983–1991, and 1992–2004. In each figure x-axis is ($\beta$) and y-axis is the three different periods where 1 represents 1970–1982, 2 represents 1983–1991, and 3 represents 1992–2004. Some countries are excluded because there is missing data or the country itself didn’t exist at that time (for example Armenia, Tajikistan, Ukraine, Georgia, Latvia, and Azerbaijan were under the Soviet Union before 1991).

Examining the figures below one can see: first, 47 (75%) of 63 nations had a maximum beta during 1983–1991, while 16 countries experienced the opposite. Second, all the countries experienced a major change in their Beta during 1983–1991. A possible reason behind this might be that the Cold War reached its peak during this period.
Figure 6.3: The Change in Beta during Three Time Periods

INDIA  

SRI_LANKA  

PERU  

IRAQ  

COLOMBIA  

TURKEY  

SOUTH_AFRICA  

PAKISTAN  

EL_SALVADOR
Figure 6.4: The Change in Beta during Three Time Periods (cont’d)

PHILIPPINES

MOZAMBAQUE

BURUNDI

LEBANON

SIERRA_LEONE

ALGERIA

EGYPT

BANGLADESH

GUATEMALA
Figure 6.5: The Change in Beta during Three Time Periods (cont’d)

NICARAGUA

ANGOLA

ETHIOPIA

UGANDA

CAMBODIA

INDONESIA

HAITI

VENEZUELA

GHANA
Figure 6.6: The Change in Beta during Three Time Periods (cont’d)

- **RWANDA**
  - Time Periods: 1 to 3
  - Beta Values: 2.0, 2.5, 3.0, 3.5, 4.0

- **AFGHANISTAN**
  - Time Periods: 1 to 3
  - Beta Values: 2.5, 3.0, 3.5, 4.0

- **HONDURAS**
  - Time Periods: 1 to 3
  - Beta Values: 2.0, 1.6, 1.2, 0.8

- **MYANMAR**
  - Time Periods: 1 to 3
  - Beta Values: 1.00, 1.25, 1.50, 1.75, 2.00

- **CHILE**
  - Time Periods: 1 to 3
  - Beta Values: 0.5, 1.0, 1.5, 2.0

- **TANZANIA**
  - Time Periods: 1 to 3
  - Beta Values: 1.0, 2.0, 3.0

- **CHAD**
  - Time Periods: 1 to 3
  - Beta Values: 0.4, 0.8, 1.2

- **SENEGAL**
  - Time Periods: 1 to 3
  - Beta Values: 0.4, 0.8, 1.2

- **BOLIVIA**
  - Time Periods: 1 to 3
  - Beta Values: 0.8, 1.0, 1.2
Figure 6.7: The Change in Beta during Three Time Periods (cont’d)
Figure 6.8: The Change in Beta during Three Time Periods (cont’d)
Figure 6.9: The Change in Beta during Three Time Periods (cont’d)
Figure 6.10: The Change in Beta during Three Time Periods (cont’d)
In this section we apply the concept of income mobility to the field of conflicts. The original work of income mobility seeks to answer the twin questions: do poor people stay poor over time? Do the rich stay rich over time? These questions are intimately associated with the issue of income inequality, since high income mobility makes the question of inequality less serious. In empirical works, the emphasis is on the income bracket climbing (up, or down). A low level of mobility is considered bad while a high level of mobility is assumed to reduce the burden of inequality (see Shorrocks, 1978). In Fields and Ok (1999) we see the most general definition of income mobility: income mobility represents the process of income distribution taking place between two points in time. Such mobility has been perceived both positively and negatively: Jarvis and Jenkins (1998) argue that one may view this as a positive phenomenon since income mobility represents an equality of opportunity while income mobility may be bad as it implies economic instability.

We ask similar questions: do countries stay conflict-ridden over time? Do countries with little conflict stay conflict-free over time? Our main goal is to see if international tension remains static, or if it changes its course — this is the notion of temporal fluctuations. In order to understand the dynamics of international tension, we consider the beta values of 92 countries at 3 different points in time and measure the index of mobility of conflict that we can attribute to international tensions.

There are two ways one can generate the index of mobility of conflict that we call the beta mobility matrix.
Definition 1: Consider a population of $n$ countries and two vectors $X(=X_1, X_2, X_3, \ldots, X_n)$ and $Y(=Y_1, Y_2, Y_3, \ldots, Y_n)$ at two different points in time. Each vector gives the rank of a country in terms of its beta value. The Spearman’s mobility index is given as:

$$M = 1 - \frac{\text{Cov}(X, Y)}{\sqrt{\text{Var}(X) \text{Var}(Y)}}$$  \hspace{1cm} (IIA)$$

Definition 2: The second measure of income mobility depends on a transition matrix. In order to do that we rank nations in terms of their betas and create deciles (or groups of nine) at two dates. The transition matrix defines the movement of nations from one decile to another. The mobility index is defined as $M$:

$$M = \left[ 1 - \left( \sum t_{ij} \right) / 9 \right]$$  \hspace{1cm} (IIB)$$

where $t_{ij} = \text{percentage of countries that do not change their ranking from deciles } j$ where the summation is undertaken from 1 to $n$ and 9 is the number of country in each group.

In Table 6.11 we present the transition matrix from 1970–1982 and 1983–1991. The year 1983 is one of the most important years as the second Cold War started in 1983 when the Soviet Union attacked Afghanistan. It is important to note that the matrix’s diagonal elements give the number of countries which did not change their deciles over time. Thus, the diagonal elements give an indication of immobility between two points in time. The off-diagonal elements capture mobility and the mobility is measured as a horizontal move.
We have ranked 92 nations in descending order in terms of their beta values in 1970 and 1983. The first decile comprises the countries with the highest values of beta and the second decile is composed of the next 9 nations, ranked by the descending values of their beta. We thus derive the countries of 10 deciles in 1970 and 1980. Then we construct the transition matrix by looking at the movement of countries from one decile to another.

The rightward movement in the transition matrix along a row captures a decline in the beta value, while a leftward movement captures an increase in the beta value. Let us look at the first row called Deciles 1 in Table 6.11: in 1970–1982 there are 9 countries in Deciles 1 with the largest values of beta. In 1983–1991, 5 countries out of these 9 countries remained in Deciles 1 while one moved to Deciles 2, one to Deciles 3, one to Deciles 4 and one to Deciles 5. No nations moved further away from Deciles 1. Let us call $M^*$ the value of the mobility index for conflict during 1970–82 and $M^{**}$ the index for the periods from 1983–1991 and 1992–2004. We calculate the values of $M^*$ and $M^{**}$ by applying (IIb):

$$M^* = .814 \quad \text{(IIc)}$$

$$M^{**} = .802 \quad \text{(IIId)}$$

What is important for us is the observation that the mobility index based on the transition matrix shows a mild decline of 1.47%. This has a message for us: during the full blast of the Cold War, the role of international tension was as high as it was during the post-Iraq war days. In the light of the beta mobility matrix of conflicts, we can argue that the role of international tension has not changed much in determining
local/ country-specific conflicts — subject to the limitations of the proposed measures.
Figure 6.11: Beta Transition/ Mobility Matrix 1970–1982 to 1983–1991

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<th>Decile .3</th>
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Note: Some nations are missing since the data did not exist, or the nation did not exist, in 1970

Figure 6.12: Beta Transition/ Mobility Matrix 1983–1991 to 1992–2004

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<td>1</td>
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<td>1</td>
<td>3</td>
<td>3</td>
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<td>Decile .9</td>
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<td>1</td>
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<td>2</td>
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<tr>
<td>Decile .10</td>
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</tbody>
</table>

Note: Some data are missing as the nations, or their data, did not exist in 1983
6.4 Data

6.4.1 Data on Conflict and Inequality

Beta is the risk of conflict due to international tension. Measuring conflict is the main problem in examining the relationship between conflicts and other variables. If we look at the existing literature on conflicts, we will find that most uses the Correlates of War (COW) database.

The inequality data is drawn from the Estimated Household Income Inequality Data Set (EHII) — a global dataset derived from the econometric relationship between UTIP-UNIDO, other conditioning variables, and the World Bank’s Deininger and Squire data set (see http://utip.gov.utexas.edu/about.html). The UTIP-UNIDO data set source computes inequality measures for nearly 3200 country/year observations, covering over 150 countries during the period 1963–1999.

In this conceptual model, the risk of conflicts due to international tension is considered a function of inequality, as well as of GDP growth, military expenditure, internationalisation index, political index, and openness.

Data for Internationalisation index is from Sachs and Warner. A data set of a 0-1 variable, varying by country and year, indicating whether or not a country is considered internationalised or not by the Sachs and Warner (1995) criteria (see: http://www.bris.ac.uk/Depts/Economics/Growth/sachs.htm)
Data for Political index is from the Freedom in the World survey which provides an annual evaluation of the state of global freedom as experienced by individuals. The survey measures freedom—the opportunity to act spontaneously in a variety of fields outside the control of the government and other centers of potential domination—according to two broad categories: political rights and civil liberties. Political rights enable people to participate freely in the political process, including the right to vote freely for distinct alternatives in legitimate elections, compete for public office, join political parties and organizations, and elect representatives who have a decisive impact on public policies and are accountable to the electorate. Civil liberties allow for the freedoms of expression and belief, associational and organizational rights, rule of law, and personal autonomy without interference from the state.

The survey includes both analytical reports and numerical ratings for 193 countries and 15 select territories. Each country and territory report includes an overview section, which provides historical background and a brief description of the year’s major developments, as well as a section summarizing the current state of political rights and civil liberties. In addition, each country and territory is assigned a numerical rating—on a scale of 1 to 7—for political rights and an analogous rating for civil liberties; a rating of 1 indicates the highest degree of freedom and 7 the lowest level of freedom. These ratings, which are calculated based on the methodological process described below, determine whether a country is classified as Free, Partly Free, or Not Free by the survey. (See http://www.freedomhouse.org).

Data for openness is from the Penn World Table (PWT), Center for International Comparisons at the University of Pennsylvania (see http://pwt.econ.upenn.edu).
Openness is measured as exports plus imports divided by GDP which is the total trade as a percentage of GDP. The export and import figures are in national currencies from the World Bank and United Nations data archives. Note that when the export and import figures and GDP are expressed in real values, the value of OPENC will be the same because the price level (conversion factor) for domestic currency and exports and imports is the same.

The model is based on three time periods: 1970–1982, 1983–1991, and 1992–2004. In this work we will use the panel data that will allow us to control for unobservable time-invariant country-specific effects that result in a missing-variable bias. This problem is recognised in many studies such as Bruno et al. (1995), Ravallion (1995), Bourguignon and Morrison (1998), Deininger and Squire (1996 and 1998), and Forbes (2000).

The fixed effect model setting will be used in this study for three main reasons. First, the fixed model will control the unobservable country specific characteristics and will reduce possible hetero-scedasticity problems rooting from probable differences across countries (Greene, 1997). Second, the fixed model is preferred for the reason that the most important objective of this chapter is to explore what factors have caused changes in intensity of conflicts over time within countries rather than to explain variation in the intensity of conflicts across countries. Another reason for choosing the fixed effect model is because it is more appropriate when the focus is on a precise number of countries and the inference is limited to these countries (Baltagi, 1995).
Table 6.6: Regression Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Pooled</th>
<th>(2) Fixed Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP Growth</td>
<td>-0.13474***</td>
<td>-0.122***</td>
</tr>
<tr>
<td></td>
<td>(-3.17785)</td>
<td>(-2.82105)</td>
</tr>
<tr>
<td>Inequality</td>
<td>0.042839***</td>
<td>0.065038***</td>
</tr>
<tr>
<td></td>
<td>(2.931436)</td>
<td>(2.707881)</td>
</tr>
<tr>
<td>Military Expenditure as % of GDP</td>
<td>0.198228***</td>
<td>0.233973***</td>
</tr>
<tr>
<td></td>
<td>(2.816221)</td>
<td>(3.138729)</td>
</tr>
<tr>
<td>Internationalisation index</td>
<td>-0.71536*</td>
<td>-0.67743*</td>
</tr>
<tr>
<td></td>
<td>(-1.8392)</td>
<td>(-1.74142)</td>
</tr>
<tr>
<td>Political Index</td>
<td>-0.0368</td>
<td>-0.02106</td>
</tr>
<tr>
<td></td>
<td>(-0.68671)</td>
<td>(-0.4361)</td>
</tr>
<tr>
<td>Openness</td>
<td>-0.00821***</td>
<td>-0.00777***</td>
</tr>
<tr>
<td></td>
<td>(-2.65211)</td>
<td>(-2.49622)</td>
</tr>
<tr>
<td>Dum1</td>
<td>1.715026***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.6297)</td>
<td></td>
</tr>
<tr>
<td>Dum2</td>
<td>1.205299*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.674345)</td>
<td></td>
</tr>
<tr>
<td>Dum3</td>
<td>0.122102</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.327491)</td>
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</tr>
<tr>
<td>Constant</td>
<td>0.16747</td>
<td></td>
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<tr>
<td></td>
<td>(0.129326)</td>
<td></td>
</tr>
</tbody>
</table>

Observations: 276, Countries: 92, Years: 1970-2004, Adjusted R²: 0.323368, R-squared: 0.366673

Note: t-statistics in parenthesis. ***, **, and * indicate, respectively, statistically significance at the 1%, 5% and 10% level.

The results shown in Table 6.6 indicate that the signs of the parameters are almost all as hypothesised. Inequality and military expenditure increases Beta. Moreover, GDP growth, internationalisation index and political index lower Beta. Inequality and military expenditure have a positive coefficient and are statistically significant with Beta. A unit increase in inequality and military expenditure causes an increase in the level of intensity of conflicts by 4.28% and 19.82% respectively. Conversely, GDP
growth, internationalisation index, and openness index negatively affect beta. A unit decrease in GDP growth, internationalisation index, and openness index causes an increase in beta by 13.47%, 71.54%, and 0.82% respectively. This result is consistent with the thesis that a lower growth rate increases the risk of conflict, as individuals have less to lose from conflict in low income situations. The period dummy variables Dum 1 and Dum 2 are statistically significant and have a positive coefficient which increases beta by 1.21 and 0.122 respectively.

In the fixed effect model, we find that there is a significant positive relation between beta and inequality. A one unit increase in inequality results in a decrease in beta by 6.5%. Beta decreases by 12.2%, 67.74%, and 0.77%, for a one unit increase in GDP growth, internationalisation index, and openness index respectively. On the other hand, a one unit decrease in military expenditure causes a decrease in beta by 23.4%.

6.5 Local Conflicts with Endogenous Global Partnership Formation among Terrorist Organisations

Our main contention here is that local and regional factors create a ground for local agents to engage in conflicts to redress local problems. However, this thesis is about proposing a new mechanism of how the local-global link is made and how it operates. The main goal of this section is to explain how such a partnership between local and international, and also among local, agents can take place. Once again we will describe the partnership formation as an equilibrium phenomenon that can explain the persistence of conflicts and also the incentive structures of conflicts at the local level.
6.5.1 Brief Introduction to Group Formation: Background Models

Formations of group and group behaviour have offered challenges to economists for a long time. There are two distinct approaches to the formation of alliance or group in economics. First, considerable attention has been accorded to the problem of group formation from the perspective of cooperative games (Aumann, 1989; Aumann and Peleg, 1960; Gillies, 1959; von Neumann and Morgenstern, 1944, Shapley and Shubik, 1969). In these models, potential members decide whether to join a group/association/alliance. Once they join and the group is formed, actions of all these members are constrained by the dictates of a mutually agreed contract. The focus is on the joint actions that the group can take independently of the actions of non-group members.

In order to highlight group formation, these models typically examine the terms of the mutually acceptable contract. These models also examine the joint action of the group and the related issue of limits to group size. More complex models examine the possibility of simultaneous formation of multiple groups. The crux of the analysis is to home in on the formation of a group and the joint actions it imposes on itself. The natural extension of this line of reasoning is to attribute some kind of stability to such groups: the major requirement is to have groups and their joint actions immune to deviations either by a member or by a sub-group of members (see Gangopadhyay, 2000; Harsanyi, 1974).

On the other hand, the non-cooperative approach highlights the formation of a group in the light of the internal functioning of the group. In non-cooperative games, the focus of research is on how members choose their joint actions (see Gangopadhyay,
Outcomes of cooperative games, or coalitional games, do not depend on the details of individual actions. Our focus is on the non-cooperative aspect of the formation of equilibrium groups. Once the group is formed, the group behaves like a single entity in choosing the group activity; so in this regard our model belongs to the former class of models.

Possibilities of cooperative ventures in oligopolies have been examined in Katz and Shapiro (1985); Kamien, Muller and Zang (1992); Matutes and Padilla (1994) and Yi (1997). Katz and Shapiro (1985) examine incentives for firms to reach perfect compatibility with all the products in the industry. Kamien, Muller and Zang highlight research joint ventures in the context of industry-wide agreements. Matutes and Padilla (1994) consider formation of groups as a simultaneous game (like ours) and consider coalition-proof Nash equilibrium as their solution concept (as opposed to the Cournot Nash equilibrium of this study). Yi (1997) develops non-cooperative games of coalition formation to compare equilibria of different group-formation games.

We apply a model of endogenous group formation in the highly simplified context of symmetric oligopoly with a linear demand function. In this model, firms form groups in order to reduce marginal costs of production by harnessing economies of scale. They also form groups to capture the largest possible market spoils by acting as a single entity to enhance their market power. The management of a group has a compensation function that depends on own-profit as well as on group size. We assume that the management of a group has an incentive to increase group size in order to increase their own power, prestige and influence. In such a scenario, firms
simultaneously decide to form groups in response to each other. The proposed equilibrium is a combination of mutual best responses. The main result of this baseline model shows that firms, in equilibrium, form two symmetric and equal groups whose structure is inefficient. Each group has too many members in relation to the efficient scale of operation as dictated by the finite supervising limits that constrain management. A simple extension of the model with asymmetric supervising limits of managements across the groups can easily explain asymmetric group structures in equilibrium. Similarly, if managements across groups have asymmetric incentives to enhance own-group size, firms will form asymmetric groups in equilibrium. We thus argue that the larger the supervising limit of a group, the larger will be the group size. Similarly, the stronger the passion (preferences) for power, prestige and influence of the management of a group, the larger will be the group size.

Bloch (1995) and Belleflamme (2000) consider cases where firms form groups in order to decrease costs. Existing theory of partnerships argues that partners get together to exploit economies of scale, wherefrom groups form (Farrell and Scotchmer, 1988). Yi (1997) shows in the context of coalitional games that the group/coalition contains too many members in equilibrium. Our chapter bears some apparent similarities with Bloch’s paper, but there are major differences: Bloch considers the group formation in a sequential setting in which one group acts as a Stackleberg leader and, thereby, captures more than three-quarters of the market by forming an alliance with roughly three-quarter of the firms in an industry. The followers are forced to accept a lower share by the formation of a smaller group. We, on the other hand, postulate simultaneous moves by two endogenous groups who
respond to each other in forming alliances. One may therefore call our model one of endogenous and reciprocal group formation. Bloch has a very restrictive assumption about group formation that drives his findings: he posits a two-stage model, such that firms form irrevocable alliances in the first stage in a sequential fashion, as described above. In the second stage they compete against each other for market shares in order to maximise their individual market spoils\textsuperscript{22}. The formation of an alliance is thus limited to the first stage. In the second stage, these firms take no joint action. Such a setting may be appealing for some scenarios such as common R&D projects, common use of facilities and network externalities, as stressed by Bloch. But there are important cases when group/alliance formation takes place with the motive of seizing larger market shares and capturing larger profits. A common example is merger and acquisition. Our model considers the formation of groups in a scenario in which once groups are formed, members of a group take joint actions to compete against members of other groups as unified entities.

In Farrell and Scotchmer (1988), the possibility arises that an efficient industry-wide grand coalition of firms is feasible if there are economies of scale. Our model is different from that of Farrell and Scotchmer on two important counts: we make a more general assumption about scale economies. Initially, as the size of the group increases, the marginal cost of production of firms in the group declines due to economies of scale till a point. Beyond this point, diseconomies of scale set in due to supervising constraints. As a result, we postulate an average cost function that

\textsuperscript{22} The equilibrium in Bloch’s paper derives from this assumption: since these firms still compete in the product market as oligopolists, the formation of a group has dual effects. First, the reduction in a firm’s marginal cost increases its profit. Second, the cost reduction of its competitors induces more aggressive behaviour on their part and causes a decline in its profit. The implication is that as a new firm enters a group, it enjoys a larger decline in its cost the larger the group size. Thus, as the group size increases, the incentive to admit more members into the group decreases; wherefrom the critical size is arrived at. Beyond critical size, admission of a new member lowers the profit of each member.
displays the usual U-shape. In addition, we assume that the executive compensation of a group depends partially on the profit of the group and partially on the size. Based on these twin assumptions, we derive the equilibrium size of two symmetric groups of firms that endogenously decide to form groups in response to each other.

6.5.2 A Simple Model of Terrorism as Partnership Formation

The goal of a terrorist group is to obtain some political concessions for its constituency, from a state or a group of states. We are not modelling the state in our work, whose goal is to resist making concessions. Terror activities and eliciting concessions are not free, and a terrorist group incurs a pecuniary cost. We label a political concession, the objective of a terror group, as ‘\(a\)’, and the cost of group \(i\) as ‘\(c_i\)’ for undertaking the conflict, or terror attack. For ease, we assume that each agent in a group has one unit of capital. These agents, or producers of terror, endogenously decide to join groups or associations.

For our analysis, we assume that two groups are being formed, and we label them as \(M_1\) and \(M_2\). This idea of two-group formation is akin to duopolisation of an industry, widely known in the literature on group formation from the findings in Horn and Persson (2001). This is also similar to the bipolar model of superpowers.

At the outset we know neither the size of each group of terrorists nor its membership. By construction of the problem, the size of the group is captured by its capital stock, which acts as a proxy for its membership. Once the groups are formed, they engage
in a simple one-shot game as will be outlined in due course. The utility/return to
group $i$ is defined by equation (1a) $\pi^*_i$:

$$\pi^*_i = (a - 2c_i + c_j)^2 / (9b) \quad (1a)$$

Note that ‘a’ is the political concession, whilst $(c_i - c_j)$ is a measure of cost-
disadvantage for group $i$ if $(c_i - c_j) > 0$ for eliciting the same political concession
‘a’. Similarly, $(c_i - c_j)$ is a measure of cost-advantage for group $i$ if $(c_i - c_j) < 0$.
The cost disadvantage, or advantage, enters the return function as a reputation effect
that is necessary for converting the decisions of terror games as games. The average
cost of production of the $i^{th}$ group is $c_i$, $(a_i - c_j)$; the net political concession over
cost for group $i$ then (1a) gives, in some measure, the quadratic utility function from
the net concessions of the $i^{th}$ group, with the reputation cost/advantage integrated
into the system.

We assume a supervising constraint that the leaders/senior management of a terrorist
group face as the size of the group increases. Due to this constraint the average cost
of a group falls with an increase in its size or capital, but beyond a critical size the
average cost starts rising. In order to highlight this aspect we introduce an average
cost function that is U-shaped:

**Assumption 7**: As the capital stock increases, the average cost of a group declines till
a particular level of capital stock and then starts rising. That is,

$$c_i = c_0 - c_{11}k_i + c_{12}k_i^2 \quad c_{11} > 0, c_{12} > 0 \quad (1b)$$
\[ \frac{dc_i}{dk_i} = -c_{11} + 2c_{12}k_i \]

Hence \((dc_i/dk_i) > 0\) for \(k_i < \left[ c_{11} / (2c_{12}) \right]\) and \((dc/dk) < 0\) for \(k_i > \left[ c_{11} / (2c_{12}) \right]\). We assume the structure of the average cost, \(c_i\), is the same for each group.

We posit that the leaders’/managerial compensation function has two components: we retain the usual assumption that managers are compensated on the basis of their performance, measured in terms of group returns as highlighted in equation (1b). We also assume that the senior management of a group derives benefits from the size of the firm. This may be due to their enhanced power, prestige and improved position in the world of terrorists. We formalise this in Assumption 8:

Assumption 8: The compensation, \(L_i\), of the leaders/senior management of the group \(i\) is given by:

\[ L_i = m(\gamma - c_i) + \pi_i^* \] (1c)

Note that \(m\) and \(\gamma\) are constants, whilst \(c_i\) is the cost function of group \(i\). The first component is the managerial return from the size of the group that increases with \(k_i\) until \(k^* = c_{11} / 2c_{12}\) and starts declining thereafter as the group becomes less efficient beyond this point. The second component is the usual the group return. The group return of a group is given by equation (1a).

Corollary 1: The group return functions of these two groups \(M_1\) and \(M_2\) are given by:
\[
\pi_1^* = \frac{(a - c_0 + (2k_1 - k_2)c_{11} - (2k_1^2 - k_2^2)c_{12})^2}{9b}
\]  
(2a)

\[
\pi_2^* = \frac{(a - c_0 + (2k_2 - k_1)c_{11} - (2k_2^2 - k_1^2)c_{12})^2}{9b}
\]  
(2b)

**Proof:** Substituting (1c) into (1b) yields (2a) and (2b). QED.

**Lemma 1:** The optimal capital stock (size) of the first group in response to the optimal capital stock (size) of the second group is given by:

\[
(a - c_0 + 9bm) + 2c_{11}k_1 - c_{11}k_2 - 2c_{12}k_1^2 + c_{12}k_2^2 = 0
\]  
(2c)

Similarly the optimal capital stock of the second group is:

\[
(a - c_0 + 9bm) + 2c_{11}k_2 - c_{11}k_1 - 2c_{12}k_2^2 + c_{12}k_1^2 = 0
\]  
(2d)

**Proof:** Substituting (2a) into (1d) and differentiating it with respect to \(k_1\) and setting it equal to zero yields (2a). Similarly substituting (2b) into (1d) and differentiating it with respect to \(k_2\) and setting it equal to zero yields (2b). Equation (2c) and (2d) are the (implicit) reaction functions of these two groups \(M_1\) and \(M_2\). QED.

From the construction of the problem \(k_1\) and \(k_2\) are the proxy for the group size in the two groups \(M_1\) and \(M_2\). The larger the values of \(k_1\) and \(k_2\), the larger are group sizes. Similarly, the lower the values of \(k_1\) and \(k_2\), the lower are the group sizes.

Now we determine the equilibrium size of each group from the reaction functions. We apply the simple notion of the Nash equilibrium: the equilibrium sizes of these
groups are the values of $k_1$ and $k_2$ that are the mutual best responses. In the merger literature the traditional criterion states that a group $M^A$ would dominate $M^O$ if total returns from $M^A$ are larger than total returns from $M^O$. In this chapter we apply the same criterion (see Horn and Persson, 2001, footnote 7).

In order to characterise the equilibrium we prove the following.

**Corollary 2**: Define $k^*$ as

$$ k^* = k_1^* = k_2^* = \frac{c_{11}}{(2c_{12})} $$

(3a)

There does not exist a pure strategy Nash equilibrium in the game if $k_1 < k^* = \frac{c_{11}}{(2c_{12})}$, $k_2 < k^* = \frac{c_{11}}{(2c_{12})}$, or both these inequalities are true.

**Proof**: Suppose a Nash equilibrium exists. We can show at least one of these groups will have incentive to deviate unilaterally from this equilibrium by increasing its size. By definition, this is not a Nash equilibrium.

**Corollary 3**: The slope of the reaction function, $R^i$, of the $i^{th}$ group is given by:

$$ \left( \frac{dk_2}{dk_1} \right)^i = 2\left( c_{11} - 2c_{12}k_i \right)/(c_{11} - 2c_{12}k_i) $$

(3b)

**Proof**: From Corollary 2 we know that $\left( \frac{dk_2}{dk_1} \right)^i > 0$ for $k_i > \frac{c_{11}}{(2c_{12})}$ for $i = 1,2$.

The curvature of the reaction function $R^i$ is given by
\[
\left( \frac{d^2k_2}{dk_1^2} \right)^R = 4c_{12} \left[ (c_{11} - 2c_{12}k_1)^2 - (c_{11} - 2c_{12}k_2) \right] / \left[ (c_{11} - 2c_{12}k_2)^3 \right] (3c)
\]

It is also instructive to note that \( \left( \frac{d^2k}{dk_i^2} \right)^R > 0 \) for values of \( (k, k) \) lying below the 45°-line passing through the origin. For all values above this 45°-line, \( \left( \frac{d^2k_2}{dk_1^2} \right)^R < 0 \).

**Corollary 4:** The reaction function of group \( i \) has an intercept at the \( k_i \) axis at \( k_i^{**} \) such that:

\[
k_i^{**} = c_{11} / (2c_{12}) + \sqrt{c_{11}^2 + 2c_ih_i} / (2c_{12})
\]

\[
h_i = (a + 9bm - c_0 - c_1k^* + c_{12}k^*)
\]

**Theorem 3:** The proposed game as characterised by the reaction functions (2c) and (2d) has a unique Nash equilibrium that gives us the equilibrium group size. In the unique Nash equilibrium, \( c_{11} / (2c_{12}) + \sqrt{c_{11}^2 + 2c_ih_i} / (2c_{12}) \) agents endogenously form a group in response to the formation of another group by \( c_{11} / (2c_{12}) + \sqrt{c_{11}^2 + 4c_{12}(a - c_0 + 9bm)} / (2c_{12}) \) agents. In this equilibrium the system will be beset with inefficiency as measured by \( \sqrt{c_{11}^2 + 4c_{12}(a - c_0 + 9bm)} / (2c_{12}) \).

**Proof:** We will provide a qualitative proof first. The Nash equilibrium is given by the values of \( k_1 \) and \( k_2 \) which simultaneously solve the non-linear equations (2c) and (2d). Due to Corollary 2 through to Corollary 4, we are able to draw the reaction functions in figure 6.13 as they are. The Nash equilibrium is given by the point of intersection of these two reaction functions along the 45°-line.
In regions I-III there does not exist any pure strategy Nash equilibrium since one or both firms have incentive to deviate unilaterally from these regions. In the relevant region OA is the 45°-line above which reaction functions are concave and below which reaction functions are convex from the horizontal axis. In this region both reaction functions are positively sloped, and $R^1$ and $R^2$ represent the reaction functions of group 1 and group 2. It is instructive to note that there is an economic justification for $R^1$ to start from $k_1^{**}$ and to rise with an increasing slope. Similarly, $R^2$ starts at $k_2^{**}$ and rises with a declining slope. The curvatures and positions of
these reaction functions ensure the existence of the equilibrium E. We also derive the equilibrium as an explicit solution of the reaction functions. The stability of the equilibrium is ensured by the fact that the $R^1$ function is steeper than the $R^2$ function at E. The uniqueness is also guaranteed from these slopes.

We calculate the symmetric and pure-strategy Nash equilibrium by substituting $k_1 = k_2 = k$ into either (2c), or (2d). This substitution yields the quadratic equation:

$$ (a - c_0 + 9mb) + c_{11} k - c_{12} k^2 = 0 $$  \hspace{2cm} (4c)

The larger of the twin roots of the quadratic equation (4c) gives the (Nash) equilibrium group size:

$$ k^* = \left[ c_{11} / (2c_{12}) \right] + \left[ \sqrt{c_{11}^2 + 4c_{12}(a - c_0 + 9bm)} \right] / (2c_{12}) $$  \hspace{2cm} (4d)

It is instructive to note that the average cost is minimised at $k^* = c_{11} / (2c_{12})$ whilst the endogenous formation of the group creates too much capital in equilibrium since $k^* > k^*$. The inefficiency due to this overcapitalisation is measured as the difference between $k^*$ and $k^*$. From (3a) and (4d) we calculate the inefficiency as

$$ \left[ \sqrt{c_{11}^2 + 4c_{12}(a - c_0 + 9bm)} \right] / (2c_{12}). $$  \hspace{2cm} QED.

**Corollary 5:** From the above formulation we can note that an asymmetric equilibrium, with asymmetric equilibrium group sizes, will exist when the optimal size of operation $k^* = [c_{11} / (2c_{12})]$ and $m$ will vary across groups.
6.5.3 Discussion

We are able to demonstrate that there exists a unique, symmetric and stable equilibrium size of terrorist group that is self-enforceable: each group is endogenously formed as the best response to the formation of the other group. The critical factor behind this equilibrium is two-fold: first, the marginal cost function of each group is U-shaped since there exists an efficient scale of operation/ production for a group due to the supervising limits/ constraints of its leaders/ management. Secondly, the compensation function of leaders/ managers is not only influenced by net returns from concessions but also by the size of the group. The return from the size may be pecuniary or non-pecuniary, such as power, prestige and influence. Because of the second component in the compensation function, each group has an incentive to accumulate its size beyond the efficient scale. The excess of scale beyond the efficient scale can be used as a measure of inefficiency associated with terrorist group formation. In my opinion, to some extent, inefficiency in size can be used as an explanation of the rising incidences of conflict and terrorist attacks in the modern world.

As a corollary, we find that in our model an asymmetric equilibrium, and hence asymmetric group size, exists for two sets of reasons: first, the asymmetric group size, in equilibrium, will exist when the managements across these groups have asymmetric supervising limits. Second, the asymmetric group sizes, in equilibrium, can be explained by asymmetry in passions/ preferences of managements for power, prestige and influence.
Thus, the larger the supervising limits/ constraints of a group, the larger will be the group size. One might call the supervising limit an objective factor that drives the size of groups in equilibrium. This is similar in spirit to the established result in this context: the more efficient a group, the larger the equilibrium group size (Farrell and Scotchmer, 1988). Our model also singles out a subjective factor — the passion for power, prestige and influence — that can seriously influence the equilibrium group size. The larger the passion for power, prestige and influence of the management, the larger will be this group size in equilibrium. Variations in these objective and subjective factors can have profound effects on the equilibrium group size, asymmetry of equilibrium group sizes, and industry-wide inefficiency.

6.6 Dynamics of Conflict Cycles: Terror Cycles as a Special Case

The focus of our current research is on conflicts induced by terror strikes and armed insurgencies. We examine violent conflicts. As our empirical findings highlight, there is reason to believe that there is some kind of cyclical fluctuation in the inter-temporal conflict data as the beta values show some sort of instability over time.

Our findings are in consonance with earlier studies on the time series of terrorist activities. Enders et al., (1992), Enders and Sandler (1993 and 2000) has unravelled cycles in the time series data on various indices of terror activities around the globe. As an example, Enders and Sandler (2000) look at the quarterly data from 1970–1996 on the indices of transnational terrorist activities, and establish several types of cycles such as a long-term primary cycle of 18.57 quarters and a medium term secondary cycle of 7.65 quarters; the index used is the number of terrorist attacks. Several such cycles have been demonstrated to exist with other measures of terrorist
activities. Our empirical findings point to that there may exist cyclical fluctuations in violent conflicts driven by international factors. Researchers have spent very little attention on the development of theoretical models that can explain these cycles.

There are conjectures that terrorism displays some kind of clustering, as terror groups tend to copy each other’s action plans. The cascade of terrorist activities induces law enforcers to respond strongly to terrorists by adopting suitable preventive measures, which gradually reduce the incidence of terrorist attacks — a virtuous cycle is thereby created. Once terror attacks are in low ebb, the cycle recurs as law enforcers relax and incidents of terrorism increase.

Some ad hoc modelling has taken place postulating ex, ante, and unexplained relationships between terrorist activities and law enforcement, as in Faria (2003), but the field is has many gaps as consistent and rigorous modelling is still not available. In the following, we provide some conjectures about the possibility of endogenously driven terror cycles.

6.6.1 The Model

The starting point of our analysis is to model the ‘quality’ of terror plans of terror groups and the quality of governance within terror groups. The terror groups, as postulated in this chapter, receive funding, technology and logistic support from international sources — globally located decision-makers. These decision-makers supply these inputs only when they are convinced that the plans of the terrorists are feasible and the governance of the local terrorist group is of high quality so that an ‘appropriate course of terror activities’ can be unleashed by the group. This is where
the quality of terror projects and the terror group’s governance matters: if the perception of the international supporter/financier is that the governance of terror groups and their projects and plans are not of high quality, the groups receive no or little material support. The lack of resources starves the specific group and gradually reduces its viability in carrying out terror attacks. For the sake of brevity, in the modelling section we will use ‘quality of governance’ to label the internal governance of terror groups and the quality of their plans and projects. By ‘available resources’ we mean the financial, technical and logistic support given by global decision-makers.

The point of departure of our model is a straightforward postulation of a two-way interaction between quality of governance and the available resources of a terror group: quality of governance, G, is an increasing and non-linear function of their available resources, T. On the other hand, T is an increasing linear function of quality of governance. We write them as:

\[ G = G(T) \text{ with } G' > 0 \]  \hspace{1cm} (5a)
\[ T = T(G) \text{ with } T' > 0 \]  \hspace{1cm} (5b)

This is a model of ‘mutual causation’ between two variables G and T (see Kaldor, 1940, and Swan, 1962). We postulate that G is S-shaped. For low values of T, G”>0 and for high values of T, G”<0. For initial low values of T, the value of G is low as the group is severely resource-constrained to attract appropriate ‘talent’ for terror strikes. As resources increase, for low values of G, the terror group starts attracting high quality terrorists who will, in turn, reinforce the quality until the limit at which diminishing productivity sets in and the quality function G flattens out. We label this
production function of quality of governance (of terrorism) relation as G in figure 6.14. We label the resource function as T in Diagram 6.4 that linearly increases with increasing quality. We postulate that G and T mutually ‘cause’ each other: the greater the quality of governance, the greater the international revenues that the terror group can attract. The lower the resources, the lower the quality of governance. The point of intersection between T and G characterises an equilibrium as E₁.

Why is this an equilibrium?

At E₁ there is no tendency for either G or T to change, since the ‘causal’ relationships are simultaneously satisfied. Equilibrium E₁ is locally stable: in the vicinity of E₁, quality of governance and resources move in the right direction to restore the system to E₁. The condition for a stable equilibrium is that the T line is steeper than the slope of the G function at the point of intersection. However, there is nothing sacrosanct about it.

**Figure 6.14: Equilibrium Quality of Governance**
Now, from a simple comparative-static exercise one can easily establish that a shift in the T line will result in a change in equilibrium. For small shifts, the new equilibrium will be fairly close to the original one at $E_1$. However, if there is a significant shift of the T line, then the new equilibrium will go beyond the increasing productivity zone and the T line and Q functions will intersect at a new equilibrium $E_2$ at a high quality level. Such a movement from $E_1$ to $E_2$ can be very quick, and if the T line is steeper than the slope of the Q function at $E_2$, then $E_2$ is also a stable equilibrium that will persist until further shocks to T. It is worth noting that the quality of governance is much higher at $E_2$, and this equilibrium involves a deadly series of successful terror attacks given the security and safeguard measures of the law enforcement agency. The increase in quality, following further increases in T, becomes sluggish, but a sudden and sharp decline in T can easily take the system back to the low-level equilibrium $E_1$.

### 6.6.2 An Extension

Now suppose that the T line is also non-linear and inverse S-shaped: the ability to raise resources of a government decreases at the outset until a critical quality is achieved. Once the critical quality of governance is reached, the terror group starts attracting larger resources, leading to an increasing rate of growth of T beyond the critical level $T_c$. Thus:

\[
T' < 0 \text{ for } T < T_c \tag{5c}
\]

\[
T' > 0 \text{ for } T > T_c \tag{5d}
\]
It is possible that the system is now characterised by three equilibria: $E_1$, $E_2$ and $E_3$. Equilibria $E_1$ and $E_3$ are stable and separated by an unstable equilibrium $E_2$. $E_1$ is the low quality equilibrium with a low incidence of terror attacks while $E_2$ is the high quality equilibrium with a high incidence of terror attacks. Any temporary perturbation from $E_3$ (or, $E_1$) beyond $E_2$ can lead to $E_1$ (or, $E_3$).

Even more interesting cases arise when the equilibria are unstable: a small change leads to a ‘vicious’ or ‘virtuous’ cumulative process. Starting from an unstable equilibrium, any temporary improvement in quality of governance, or resources, will mutually reinforce each other to take the economy along a virtuous cumulative process. Similarly, a temporary decline in resources, or quality of governance, will mutually reinforce each other to engender a vicious cumulative process. In order to have unstable equilibrium, we need $G$ and $T$ to be strongly sensitive to each other near their intersection. The context of multiple stable equilibria can adequately
explain the experience of terror cycles. The low-level equilibrium $E_1$ depicts a relatively stable position wherefrom the terror situation does not improve; but this low-level equilibrium of terrorist activities can be destroyed by a momentary, but sufficiently powerful, improvement in governance or resource availability. Even a few talented people in the terrorist fold can significantly alter the situation for ever: such changes can bring about a new era of high governance as captured by $E_3$, and a sudden and sustained upsurge of terrorist activities in the region, given the level of deterrence activities. Conversely, if the system is perched on $E_3$ already, shocks and changes cannot deteriorate things permanently, although adverse shocks may initiate changes that can pull the system back to the low-level equilibrium $E_1$. In the following section, we offer a full-blown model.

### 6.6.3 The Full-Blown Model

We postulate that the quality of governance ($G$) is influenced by the level of economic development — as captured by the level of national income ($Y$) — and the overall quality of human capital ($H$). We similarly assume that external resources ($T$) are influenced by $H$ and $Y$ as global decision-makers’ decision about funding is influenced by $H$ and $Y$. We will explain that shortly. It is postulated:

$$G = G(Y, H) \text{ with } G_Y > 0, \ G_H > 0$$  \hspace{1cm} (6a)

$$T = T(Y, H) \text{ with } T_Y > 0, \ T_H > 0$$  \hspace{1cm} (6b)

We define $E$ as the expenditure of the terror group that is influenced by the quality of governance ($G$) and the level of economic development ($Y$). Ceteris paribus, as the quality of governance rises the group needs less money to carry out the same terror
plan. As $Y$ increases, it becomes more expensive to carry out the same terror attack due to increased costs of operation and increased vigilance by law enforcement agencies. We postulate the above in equations (6c) and (6d) as:

\[ E = E(G,Y) \quad (6c) \]
\[ E_G < 0 \text{ and } E_Y > 0 \quad (6d) \]

We write:

\[ E = E(G,Y) = E(G(Y,H),Y) = E(Y,H) \quad (6e) \]

with $E_Y > 0$, $E_H < 0$ \quad (6f)

The balanced budget of the terror group requires (static sense):

\[ E(Y,H) = T(Y,H) \quad (7a) \]

We know

\[ T_H - E_H > 0 \quad (7b) \]
\[ \frac{dY}{dH} = \frac{(T_H - E_H)}{E_Y - T_Y} \quad (7c) \]

Hence \[ \frac{dY}{dH} > 0 \quad (7d) \]

if $E_Y > T_Y$

\[ \frac{dY}{dH} < 0 \quad (7e) \]

if $E_Y < T_Y$
The simple dynamic system can be reduced to

$$\frac{dY}{dt} = \beta [E(Y, H) - T(Y, H)] + b \tag{8a}$$

Ignoring the balanced budget multiplies, it implies pump-priming.

$$\frac{dH}{dt} = \alpha E(Y, H) + h \tag{8b}$$

Let us simplify our calculations by setting \( b = h = 0 \), which do not change any of our conclusions. The locus along which national income growth is constant is given in the following. From (8a) and (8b) we know:

According as \( E_y > (\leq) T_y \)

$$\frac{dY}{dH} \bigg|_{Y=0} = \frac{E_H - E_H}{E_y - T_y} > (\leq) 0 \tag{8c}$$

**Postulate 1:** At a lower level of development \( E_y < T_y \) and hence

$$\frac{dY}{dH} \bigg|_{Y=0} < 0 \tag{8d}$$

**Postulate 2:** At an intermediate range \( E_y > T_y \) and, hence,

$$\frac{dY}{dH} \bigg|_{Y=0} > 0 \tag{8e}$$

**Postulate 3:** Beyond a critical value of \( Y \), say \( Y_c \), \( E_y < T_y \), and hence (8d) holds.
Limit Cycles

In the following case, when $E_y > T_y$ at the point of intersection, the focal point node E is unstable and will cause limit cycles. This can be seen from the characteristic roots of the dynamic system by applying the Poincare and Bendixson theorem:
From Bendixson’s criterion, we know the cycle will exist if

\[ \beta(E_y - T_y) + E_H \] cannot be of fixed sign (zero excepted).

In terms of characteristics roots of the dynamic system:

Product of the characteristics roots

\[ = \beta(T_H E_y - T_y E_H) > 0 \]

Sum of the characteristics roots \( = \beta(E_y - T_y) + E_H \)

Thus, the equilibrium is stable or unstable depending on whether the sum of the characteristics roots is <0 or >0.

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Sum of the characteristics roots \( = \beta(E_y - T_y) + E_H \)

Thus, the equilibrium is stable or unstable depending on whether the sum of the characteristics roots is <0 or >0.

These ideas are similar to Myrdal’s ‘simplified mental model’ as articulated by Swan (1962): White prejudice and Black standards mutually ‘cause’ each other. The higher
the prejudice, the lower the standards that Blacks can achieve. The lower their standards, the greater will be the prejudice against them.

6.7 Concluding Comments

The main proposal of this chapter is to posit conflicts as a product of continuing international chasms, splits and differences of political and social ideologies in our modern world. Thus we argue that conflicts are, to some extent, driven by international tension, or global, ideological and geo-political factors. Notwithstanding global influence, local factors such as income inequality, income growth or lack of it, and political institutions can and do exacerbate conflicts.

This chapter starts with a detailed summary of the evolution of global rivalry and conflicts since the First World War. In the next section we provide a basic theoretical analysis of a new index, which we call beta index, of conflicts driven by international tension. We offer the beta values of 92 nations for which we have data from 1970–2004. Then we examine the inter-temporal movement of the beta index of these 92 nations to explore how international tension traversed time from one region to another. In order to do that we introduce a new concept of beta mobility akin to the measures of income mobility in the context of income distribution. We reach a conclusion that the role of international tension has not changed much in determining local/country-specific conflicts, subject to the limitations of the proposed measures.

This chapter offers an empirical foundation to the sensitivity of the beta index of a country to its economic inequality, GDP growth, military expenditure, internationalisation index, political index, and index of openness. The results indicate
that the signs of the parameters are almost all as hypothesised. Inequality, and military expenditure increase Beta. GDP growth, internationalisation index and political index lower Beta. Inequality and military expenditure have a positive coefficient and are statistically significant with Beta.

Furthermore, this chapter offers a major theoretical model to explain how local conflicts can be created by international tension. We examine conflicts mainly in the context of violence perpetrated by terrorist groups. Ours is the first model in understanding the economics of terrorist group formation in a competitive model. This model depends on the endogenous partnership between terrorist agencies/organisations across borders. The findings of the model explain how local and global issues of conflict can mix to give rise to an equilibrium conflict, which therefore has a tendency to self-perpetuate. The model also explains the incentive structures of terrorist organisations and their sizes. Finally, we explain the possibility of endogenous-driven cyclical paths for conflicts and terrorist activities by developing a simple model of terror assets.
CHAPTER 7

THE ECONOMIC INEQUALITY AND VIOLENT SOCIAL CONFLICT EMPIRICS

7.1 Introduction

Because of its geographical location, huge oil reserves, and strategic importance to the main players in international politics, the Middle East has been regarded unstable for the last 50 years. At the heart of the region’s troubles is the Israeli-Palestinian conflict, which has dominated domestic, regional, and world politics for more than five decades. The region has also hosted three wars not involving Israel (Iraq-Iran 1980-1988, Iraq-Kuwait 1991, and Iraq 2003). The region is, moreover, surrounded by other long-term conflict zones such as Sudan, Afghanistan and the Caucasus. In this chapter we will provide empirical analysis for the economic causes of conflicts of nine Middle Eastern countries.

The main strategy of our research is to identify the factors that might cause dramatic changes in the number of violent conflicts in the Middle East between 1963 and 1999. The empirical analysis is performed using a unique panel of inequality estimates that cover ten countries over the selected period. This work estimates the effects of inequality and other variables on the intensity and level of conflicts, by applying two different measures. We look for specific economic and non-economic
factors that can determine changes in violent conflicts in the region. A few observations are in order: first, our results indicate that inequality bears a negative relation with conflicts. The negative sign on the inequality variable indicates the special characteristics of a very imbalanced society where all opposition is crushed through heavy military presence and/or the very poor do not have the assets essential to initiate an armed rebellion. Secondly, a host of macroeconomic variables like inflation, military expenditure, and immigration have a positive relation with conflicts. Thirdly, foreign direct investment (FDI) as a percentage of GDP, GDP growth, and workers remittance are shown to bear a negative relation with the intensity and levels of conflicts.

The plan of this chapter is as follows: in section 7.1.1 we discuss the role of inequality in conflicts. In Section 7.2.2 we examine the role of GDP in conflicts. In Section 7.4 we explore the relevant economic variables for the Middle East. In Section 7.5 we offer the model, data sources and empirical findings and conclude in Section 7.6.

7.1.1 Conflicts and Inequality

A number of studies have focused on discovering the relation between conflicts and inequality. Studies done by Olson (1963), Sigelman and Simpson (1977), Hardy (1979), Weede (1981, 1987), Muller (1985), Park (1986), Muller and Seligson (1987), Midlarsky (1988), Londregan and Poole (1990), Boswell and Dixon (1990), Brockett (1992), Binswanger et al (1993), and Schock (1996) have reached the conclusion that inequality in the allocation of resources and material goods such as
land, wealth, income and other assets are linked with the occurrence of socio-
political instability in several countries.

Although in general most theorists assume there to be a strong relation between
inequality and violent conflicts, empirical work reveals three possible scenarios
between these variables: (a) positive relation, (b) negative relation, and (c) no
relation between the variables.

The first expectation is that economic inequality increases violent conflicts. There
are two reasons for this. When economic inequality is high, poor people are jealous
of the richer people and, having nothing to lose, choose to use force to redistribute
income. Conversely, rich people are greedy and have everything to lose; so they
acquire the resources needed to prevent the redistribution of wealth. As economic
inequality increases, conflict increases. There is much literature offering support for
a positive relation between different forms of inequality and political and social
conflicts (for example, Sigelman and Simpson, 1977; Muller, 1985; Weede, 1987). If
we look at the recent literature on the economic causes of civil wars in developing
countries, we will find inequality cited as an important factor (Schock, 1996; Boyce,
1996; Nafziger and Auvinen (1997); Stewart, 1998; Elbadawi, 1992 Collier, 2000b;
Collier and Hoeffler, 1999). Schock (1996) tests the hypothesis ‘Hypothesis 1:
Economic inequality is positively related to violent conflict’. The hypothesis is tested
using quantitative cross-national lagged panel data which examines political violence
between 1973 and 1977. He reaches a result that supports the proposed hypothesis.
Boyce (1996) points out that the main reason behind the violent conflict in El
Salvador is inequality (especially the unequal distribution of land). An empirical

Another possible explanation is that economic inequality decreases violent conflicts. It may be that higher levels of inequality are associated with a powerful privileged minority, prepared and willing to use its power to suppress conflict. Another reason may lie in the social comparison processes of human beings. As Samuel Johnson said, ‘it is better that some should be unhappy, than that none should be happy, which would be the case in a general state of equality.’ That means some people will be unhappy under moderate economic inequality, while under pure economic equality, everyone is unhappy. This viewpoint is supported by Havrilesky and Parvin. Havrilesky says,

it is reasonable to assume that a discordance-minimizing distribution of income exists at some positive level of discordance and that a perceived change in the distribution away from this minimum toward either of the extremes of equality or inequality will generate increased discordance. (Havrilesky, 1980)

Parvin proposes that
it is therefore more reasonable to assume that an optimum level of income inequality exists for any level of per capita income. Subsequently, beyond this optimum level, the net effect of further redistribution of income toward more or less equality may imply increasing, not decreasing, political unrest. (Parvin, 1973)

Other scholars have suggested that there is no direct relationship between inequality and violent conflict; and that there are more important factors involved such as absolute poverty, or mobilisation processes. It may be that economic inequality changes very gradually over time while conflict occurs erratically. There are number of studies that support this result, including a study by Duff and McCamant of Latin America (1976), one by Powell on Western-style democracies (1982), Russo’s study of South Vietnam (1972), and McAdam’s (1982) and Spielman’s studies (1971) of the United States.

7.2.2 GDP and Conflicts

Recent literature on the relation between violent conflict and GDP indicates that there is a negative relation between the two variables (Collier and Hoeffler, 2002a and 200b; Fearon and Laitin, 2003). A study by Humphreys (2003) predicted probability of war onset of 15% for a country with GDP per capita equals to $250. If this GDP per capita is doubled, then the probability of war will drop to 7.5%. Another study by Fearon and Laitin (2003) predicted a probability of 18% to countries with GDP per capita of $600. This probability decreased to 11% if the GDP per capita increased to $2000 and to less than 1% for countries with GDP per capita of $10,000. How could be this explained? One of the explanations offered by Homer-Dixon (1994) and Fearon and Laitin (2003) is that wealthier countries are more capable of protecting their assets against rebels. Another explanation is given by
Homer-Dixon (1994) where he states that poverty causes violence, and indicates to cases where scarcity leads to migrations that result in conflicts between identity groups over resources.

A study by Bates (2001) states that if the value of assets increases in any economy, then people may increase their motivation to use violence. A study by Keen (2000) mentions that if there is a rise in the value of assets of a country, this may lead to a rise in the value of controlling the state.

A study by Mack (2002) has raised an enquiry when he said that if increasing wealth would lead to decrease the amounts of conflicts, then why we are seeing the opposite. A possible explanation is presented by Humphreys (2003), who mentions that there might be other variables that outweigh the extenuating effects of increased wealth such as population sizes. Other reason is the unevenly spread of the global economic growth across different regions.

### 7.2.3 Trade and Conflicts

Does international trade increase or decrease the likelihood of conflict? If country A increases its trade with country B, will this lead to a greater risk of conflict between these two countries? According to liberal theorists, if countries A and B have mutual trade then both are benefiting, so they would be reluctant to fight with a trading partner which may lead to ‘commercial suicide’. Others claim that if there is trade between two countries this will lead to greater understanding of each other’s culture. In Europe for instance, the formation of the European Union ended a century-old

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23 For more details see Angell (1933).
conflict and brought peace between Germany and France (Burn, 1961; Isard, 2002, 2004). Another view by the Baron de Montesquieu’s, Spirits of the Laws (1748), states that commerce tends to promote peace between nations; mutual self-interest precludes war; trade also softens attitudes of peoples towards each other.

A number of studies have attempted to capture the impact of trade on peace. Polachek (1980) found that nations with the greatest amount of trade were the least hostile to each other. Another study by Oneal and Russett (1999) prove that peace and trade are highly correlated. A study by Murshed and Mamoon (2010) show that more trade between India and Pakistan decreases conflict and any measures to improve bilateral trade will be a considerable confidence building measure.

### 7.2.4 Conflicts and Some Economic Variables

Economic growth may affect conflicts through several channels. Collier and Hoeffler (1998, 2001, 2002a, and 200b) argue that civil conflicts are driven by economic opportunity rather than by political grievances: for example young men would be more likely to take up arms when their expected income as fighters is higher than their income as agricultural workers. They found also that slow income growth, low per capita income, natural resource dependence, lower male secondary education enrolment, rebel military advantages, and total population are all significantly and positively linked with the start of civil conflict. Democracy, they find, does not reduce the probability of civil conflict; this result supports their analysis of civil conflicts as being driven by economics rather than politics.
Elbadawi and Sambanis (2002) study the incidence of civil war and reach almost the same results as Collier and Hoeffler; except that they find democracy reduces the incidence of civil conflicts. A recent study by Boix (2003) develops a game-theoretic model that describes different forms of conflict, ranging from civil war to guerrilla warfare, revolution, political assassination and riot, as the result of income inequality.

Low growth rates have both a direct and indirect relation with conflict. Barro (1991), Alesina and Perotti (1996), and Collier (1998) find a significant negative relationship between investment, growth rates, and different measures of conflict. A paper by Benhabib and Rustichini (1996) presents a game theoretic structure to explain the conflict that occurs between two social groups over the allocation of resources (distribution of income). The conflict starts when each group tries to attain a larger share of output, either directly or by controlling the system of allocation. The strategic interaction between the two groups over the allocation of output affects the economy’s power of enlarging or diminishing the size of the pie over time and has an effect on growth at low or high levels of development, depending on the parameters of the production technology and the preferences.

Fearon and Laitin (2003) find that lower GDP per capita is significantly related to the onset of civil conflict, whereas democracy and ethnic diversity are not significantly related to violent conflicts.
7.3 Data and Measurement

7.3.1 Data on Conflict and Inequality

Measuring conflict is a major problem in examining the relationship between conflicts and other variables. If we look at the existing literature on conflicts, we will find that most of papers use the Correlates of War (COW) database. However, the lack of transparency of the COW database has been the focus of an exhaustive assessment by Sambanis (2002). Moreover, the database excludes conflicts which have fewer than 1000 combat-related deaths per year. As a substitute for the COW database, we will use the new Armed Conflict Data database developed by the International Peace Research Institute of Oslo, Norway and the University of Uppsala, Sweden (PRIO/Uppsala). PRIO/Uppsala is more transparent and consistent than COW and records smaller conflicts, with a threshold of 25 battle deaths per year. PRIO/Uppsala recognises three different intensity levels of conflict: Minor, Intermediate, and War.

In this chapter we will use two different measures for conflicts. The first is a dummy variable that takes a value of one when a conflict has resulted in over 1000 battle deaths in a given year and country. The second measure is a dummy variable that takes a value of one if the conflict is completely internal, and another which is equal to one when the conflict involves an external actor.

\[ \text{An armed conflict is defined in the PRIO/Uppsala database as follows: ‘a contested incompatibility which concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths.’ Refer to the PRIO website (www.prio.no/cwp/ArmedConflict) or the University of Uppsala website (www.pcr.uu.se).} \]
The inequality data is drawn from the ‘Estimated Household Income Inequality Data Set’ (EHII) — a global dataset derived from the econometric relationship between UTIP-UNIDO, other conditioning variables, and the World Bank’s Deininger and Squire data set (see http://utip.gov.utexas.edu/about.html). The University of Texas Inequality Project (UTIP) has produced an alternative global inequality data set, based on the Industrial Statistics database published annually by the United Nations Industrial Development Organization (UNIDO). This data set has approximately 3,200 observations over 36 years (1963–99). It is also based on source data that are much more likely to be accurate and consistent, both through time and across countries. However, the data do not measure household income inequality. UTIP-UNIDO is a set of measures of the dispersion of pay, using the between-groups component of a Theil index (Theil, 1972), measured across industrial categories in the manufacturing sector. While there is evidence that the UTIP-UNIDO measures provide a sensitive index of changes in distribution generally, the exact nature of the correlation between an establishment- based measure of manufacturing pay inequality and a survey-based measure of household income inequality is not clear, particularly in comparisons across countries.

Inequality is linked to a number of mathematical concepts such as skewness, variance, and dispersion. Consequently, there are several methods to compute inequality, for example the McLoone Index, the coefficient of variation, range, range ratios, the Gini coefficient, and Theil’s T statistic. The main justification for choosing Theil’s T statistic is that it offers a more flexible structure that often makes
it more suitable than other measures. If we had permanent access to all necessary
individual-level data for the population of interest, measures like the Gini coefficient
or the coefficient of variation would be generally satisfactory for describing
inequality. Yet, in the real world, individual data is hardly ever reachable, and
researchers make do with aggregated data.

Several UTIP papers have been published in relation to military expenditure and
violent conflict such as ‘Military Expenditures and Inequality: Empirical Evidence
from Global Data’ by Hamid Ali (2008); ‘Essays in Economic Development and
Conflicts’ by Hamid Ali; ‘How does Democracy Fare with Economic Welfare for a
Trading Nation?’ by Dawood Mamoon; ‘Defense and Inequality: Evidence from
Selected Asian Countries’ by Hirnissa, Habibullah, and Baharom; ‘Inequality and
Economic and Political Change’ by James Galbraith.

7.4 The Model

This chapter uses a model which addresses the findings of previous literature on
conflicts. In this conceptual model, conflicts are considered a function of inequality,
as well as of inflation, military expenditure, foreign direct investment, growth,
workers’ remittance, population, GDP per capita, military personnel, and
immigration.

\[
CON_{(i)} = \alpha_i + \beta_0 * INQ_{(i)} + \beta_1 * INF_{(i)} + \beta_2 * ME_{(i)} + \beta_3 * FDI_{(i)} + \beta_4 * GRO_{(i)} + \\
+ \beta_5 * WRG_{(i)} + \beta_6 * POP + \beta_7 * PP_{(i)} + \beta_8 * MILPER_{(i)} + \beta_9 * IMN_{(i)}
\]

Pedro Conceição and Pedro Ferreira provide a much more detailed analysis of these issues in their
UTIP working paper ‘The Young Person’s Guide to the Theil Index: Suggesting Intuitive
Interpretations and Exploring Analytical Applications.’
\[ Y_{it} = \beta_0 + \beta_1 \cdot DUM_{1(i)} + \beta_1 \cdot DUM_{2(i)} + \beta_2 \cdot DUM_{3(i)} + \epsilon_{it} \] (1a)

Where:

- \( i \) stands for country index, \( t \) represents time period,
- CON is the conflict intensity, \( \alpha_i \) is a country-specific intercept,
- INQ is the estimated income inequality,
- INF is annual inflation as measured by the year-to-year change in the consumer price index,
- ME is military expenditure as a percentage of GDP (constant 1995 US$),
- FDI is foreign direct investment as a percentage of GDP (constant 1995 US$),
- GRO is the real growth rate of the economy in the preceding period,
- WRG is the workers’ remittance as a percentage of GDP,
- PP is GDP per capita (constant 1995 US$),
- POP is the total population
- MILPER is the number of military personnel
- IMN is the immigrant population to the US as a proportion of the population in the country of origin.
- DUM1 is a dummy variable where 1 represents Arab country and 0 non-Arab country,
- DUM2 is a dummy variable where 1 represents Shiite and 0 represents non-Shiite,
- DUM3 is a dummy variable where 1 represents oil exporting countries and 0 non-oil exporting countries.
We will estimate equation (1a) by using a set of panel data including observations for ten Middle Eastern countries covering the period 1963–1999. Unfortunately, there are limited freely available data on Arab countries. As a consequence, we are unable to include more than seven Arab countries in this study: Algeria, Egypt, Jordan, Kuwait, Morocco, Syria, and Tunisia. The three non-Arab countries are Iran, Israel, and Turkey.

In this study we will use the panel data that will allow us to control for unobservable time-invariant country-specific effects that result in a missing-variable bias. This problem is recognised in many studies such as Bruno et al. (1995), Ravallion (1995), Bourguignon and Morrison (1998), Deininger and Squire (1996 and 1998), and Forbes (2000). The fixed effect model setting will be used in this study for three main reasons. First, the fixed model will control unobservable country-specific characteristics and will reduce possible hetero-scadasticity problems rooting from probable differences across countries (Greene, 1997). Second, the fixed model is preferred for the reason that the most important objective of this study is to explore what factors have caused changes in intensity of conflicts over time within countries, rather than to explain variations in the intensity of those conflicts. Another reason for choosing the fixed effect model is because it is more appropriate when the focus is on a precise number of countries and the inference is limited to those countries (Baltagi, 1995).

7.5 The Empirical Results

In this section, we will inspect the theoretical considerations discussed above using empirical evidence for ten Middle-East countries. We will construct two models
based on the conceptual model and actual data. The first uses dummy variables to represent all conflicts with over 1000 battle deaths in a given year and country. The second uses a simple dummy variable for civil and external conflicts with over 1000 casualties in a given country and year. The two models estimated using a pooled model (ordinary least squares), fixed effects (accounting for heterogeneity across countries), and random effects (accounting for heterogeneity across countries and across time). We will analyse the impact of inequality on the intensity of conflict across ten major Middle Eastern countries for the period 1963–1999. Other independent variables collected are growth rate, GDP per capita, inflation, military expenditure, FDI, population, military personnel, and immigration.

The results shown in table 7.1 indicate that the signs of the parameters are almost all as hypothesised. Military expenditure, inflation, immigration, and population, increase the probability of war. Contrarily, FDI, growth, workers’ remittance, and military personnel lower the probability of war. As for inequality, there is a negative relation between inequality and conflict intensity, indicating that increasing inequality by a unit would lower the intensity of conflict by 8.8%. Explanation for this might be either higher levels of inequality are associated with a powerful privileged minority, prepared and willing to use its power to suppress conflict; or may lie in the social comparison processes of human beings (as discussed in the literature review before).

Inflation and military expenditure both have a positive coefficient and are statistically significant with conflicts. A unit increase in inflation and military expenditure causes an increase in the level of intensity of conflicts by 0.23% and 1%
respectively. Conversely, FDI as a percentage of GDP, growth, and immigration all negatively affect conflicts. A unit decrease in FDI as a percentage of GDP, growth, and immigration causes increases in the intensity level of a conflict by 4.5%, 0.97%, and 213.25% respectively. This result is consistent with the theory that a lower growth rate increases risk of conflict, as individuals in low income situations have less to lose from conflict. Also the result of oil exports and FDI inflows lead to a less conflict which supports the liberal peace idea where international trade reduces conflict (where inequality here is a proxy for a repression effect). As for the immigration variable, immigration is endogenous to the intensity of conflict. When a conflict occurs, number of people emigrating increases. The size of immigration may proxy the intensity of conflict. The oil dummy variable (Dummy3) is statistically significant and has a negative coefficient which decreases the incidence of conflicts by 11.07%.

Table 7.2 reveals a significant negative relation between conflict and inequality. A one unit increase in inequality results in a decrease in the intensity level of conflict by 7.6%. Conflict decreases by 10.17%, 0.5%, and 145.06% for a one unit increase in FDI as a percentage of GDP, growth, and workers remittance respectively. Here also the idea of liberal peace is supported by the positive relation between oil exports and FDI inflows with conflicts. On the other hand, a one unit decrease in inflation, military expenditure, and immigration causes a decrease in the intensity level of conflict by 0.07%, 0.7%, and 141.97% respectively. The results of dummy variable 2 and 3 indicate the importance of ethnicity and oil in increasing the intensity of a conflict. If we look at the Dum 2 results we find that the greater the percentage of Shiite in the population, the lower is the intensity level of a conflict.
Table 7.1: Regression Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Pooled</th>
<th>(2) Fixed Effects</th>
<th>(3) Random Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inequality</td>
<td>-0.033544 **</td>
<td>-0.08785***</td>
<td>-0.01197***</td>
</tr>
<tr>
<td></td>
<td>(2.221113)</td>
<td>(-3.91938)</td>
<td>(-3.67083)</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.002259 ***</td>
<td>0.002265***</td>
<td>0.002289***</td>
</tr>
<tr>
<td></td>
<td>(4.635813)</td>
<td>(6.194494)</td>
<td>(4.831499)</td>
</tr>
<tr>
<td>Military Expenditure as % of GDP</td>
<td>0.007111***</td>
<td>0.010003***</td>
<td>0.008681***</td>
</tr>
<tr>
<td></td>
<td>(3.619289)</td>
<td>(7.150603)</td>
<td>(4.506451)</td>
</tr>
<tr>
<td></td>
<td>-0.06452***</td>
<td>-0.04491***</td>
<td>-0.07949***</td>
</tr>
<tr>
<td></td>
<td>(-4.29665)</td>
<td>(-4.60092)</td>
<td>(-5.35128)</td>
</tr>
<tr>
<td>FDI as % of GDP</td>
<td>-0.01207***</td>
<td>-0.00968***</td>
<td>-0.01268***</td>
</tr>
<tr>
<td></td>
<td>(-5.93838)</td>
<td>(-7.08342)</td>
<td>(-6.43429)</td>
</tr>
<tr>
<td>% of yearly growth</td>
<td>-0.74007</td>
<td>-0.25281</td>
<td>0.26338</td>
</tr>
<tr>
<td></td>
<td>(-1.61274)</td>
<td>(-0.80655)</td>
<td>(-0.58481)</td>
</tr>
<tr>
<td>Workers Remittance as % of GDP</td>
<td>-5.50E-06**</td>
<td>-1.93E-06</td>
<td>-8.71E-07</td>
</tr>
<tr>
<td></td>
<td>(-2.00716)</td>
<td>(-0.99617)</td>
<td>(-0.31498)</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>2.914059***</td>
<td>2.132453***</td>
<td>2.693899***</td>
</tr>
<tr>
<td>Yearly immigration to the US as % of total population</td>
<td>(3.617157)</td>
<td>(3.708477)</td>
<td>(3.450764)</td>
</tr>
<tr>
<td>Military Personnel</td>
<td>-0.08351***</td>
<td>-0.11973***</td>
<td>-0.1558***</td>
</tr>
<tr>
<td></td>
<td>(-4.36503)</td>
<td>(-6.80704)</td>
<td>(-6.80607)</td>
</tr>
<tr>
<td>Population</td>
<td>3.46E-06***</td>
<td>5.64E-07</td>
<td>5.60E-07</td>
</tr>
<tr>
<td></td>
<td>(3.202762)</td>
<td>(0.62953)</td>
<td>(0.471964)</td>
</tr>
<tr>
<td>Dum1</td>
<td>0.02541</td>
<td>-0.04658</td>
<td>-0.04253</td>
</tr>
<tr>
<td></td>
<td>(0.39732)</td>
<td>(-0.71234)</td>
<td>(-0.68167)</td>
</tr>
<tr>
<td>Dum2</td>
<td>-0.07197</td>
<td>-0.09292</td>
<td>-0.09531</td>
</tr>
<tr>
<td></td>
<td>(-1.09901)</td>
<td>(-1.31957)</td>
<td>(-1.51985)</td>
</tr>
<tr>
<td>Dum3</td>
<td>-0.08389*</td>
<td>-0.11073***</td>
<td>-0.17558</td>
</tr>
<tr>
<td></td>
<td>(-1.94246)</td>
<td>(-3.33142)</td>
<td>(-3.92191)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.689813***</td>
<td>0.920071***</td>
<td>0.920071***</td>
</tr>
<tr>
<td></td>
<td>(6.081123)</td>
<td>(5.228591)</td>
<td></td>
</tr>
</tbody>
</table>

Observations: 348 348 348  
Countries: 10 10 10  
Adjusted R²: 0.511366 0.535056 0.396787  
R-squared: 0.528264 0.544226 0.429816  

Note: t-statistics in parenthesis. ***, **, and * indicate, respectively, statistically significance at the 1%, 5% and 10% level.
Table 7.2: Regression Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Pooled</th>
<th>(2) Fixed Effects</th>
<th>(3) Random Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inequality</td>
<td>-0.091573***</td>
<td>-0.076088***</td>
<td>-0.050859***</td>
</tr>
<tr>
<td></td>
<td>(6.562322)</td>
<td>(-3.345247)</td>
<td>(-2.380208)</td>
</tr>
<tr>
<td></td>
<td>0.000754**</td>
<td>0.000687***</td>
<td>0.001268*</td>
</tr>
<tr>
<td></td>
<td>(2.037453)</td>
<td>(0.962346)</td>
<td>(1.929451)</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.000847</td>
<td>-0.007174***</td>
<td>-0.001500***</td>
</tr>
<tr>
<td>Military Expenditure as % of GDP</td>
<td>(0.413624)</td>
<td>(-2.459804)</td>
<td>(-0.561813)</td>
</tr>
<tr>
<td></td>
<td>-0.001343</td>
<td>-0.101747***</td>
<td>-0.055210***</td>
</tr>
<tr>
<td></td>
<td>(-0.102879)</td>
<td>(-4.580128)</td>
<td>-2.664835</td>
</tr>
<tr>
<td></td>
<td>-0.002592*</td>
<td>-0.004591***</td>
<td>-0.008972***</td>
</tr>
<tr>
<td></td>
<td>(-1.675193)</td>
<td>(-1.585396)</td>
<td>(-3.320547)</td>
</tr>
<tr>
<td>Workers Remittance as % of GDP</td>
<td>-1.447443***</td>
<td>-1.450638**</td>
<td>-1.725907***</td>
</tr>
<tr>
<td></td>
<td>(-4.213220)</td>
<td>(2.209611)</td>
<td>(-2.729125)</td>
</tr>
<tr>
<td></td>
<td>4.04E-06**</td>
<td>7.43E-06*</td>
<td>7.59E-06*</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>(1.995469)</td>
<td>(1.876433)</td>
<td>(1.947560)</td>
</tr>
<tr>
<td>Yearly immigration to the US as % of</td>
<td>1.99490**</td>
<td>1.419658</td>
<td>2.295985**</td>
</tr>
<tr>
<td>total population</td>
<td>(2.075277)</td>
<td>(1.226688)</td>
<td>(2.108987)</td>
</tr>
<tr>
<td>Military Personnel</td>
<td>0.064272***</td>
<td>-0.019566</td>
<td>-0.018299</td>
</tr>
<tr>
<td></td>
<td>(3.977971)</td>
<td>(-0.582054)</td>
<td>(-0.572095)</td>
</tr>
<tr>
<td>Population</td>
<td>9.79E-06***</td>
<td>3.83E-06**</td>
<td>6.96E-06***</td>
</tr>
<tr>
<td></td>
<td>(10.41271)</td>
<td>(2.139106)</td>
<td>(4.226150)</td>
</tr>
<tr>
<td>Dum1</td>
<td>0.118902</td>
<td>0.114587</td>
<td>0.145657*</td>
</tr>
<tr>
<td></td>
<td>(1.587167)</td>
<td>(1.277340)</td>
<td>(1.656011)</td>
</tr>
<tr>
<td>Dum2</td>
<td>-0.566320***</td>
<td>-0.574763***</td>
<td>-0.570577***</td>
</tr>
<tr>
<td></td>
<td>(-7.931723)</td>
<td>(-6.404488)</td>
<td>(-6.439276)</td>
</tr>
<tr>
<td>Dum3</td>
<td>-0.190909***</td>
<td>-0.395185***</td>
<td>-0.383280***</td>
</tr>
<tr>
<td></td>
<td>(-4.190205)</td>
<td>(-6.127085)</td>
<td>(-6.092093)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.556629***</td>
<td>1.137331***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.937525)</td>
<td>(4.641377)</td>
<td></td>
</tr>
</tbody>
</table>

Note: t-statistics in parenthesis. ***, **, and * indicate, respectively, statistically significance at the 1%, 5% and 10% level.
7.6 Conclusion

The main goal of this chapter is to identify the factors that caused dramatic changes in the intensity of conflicts in the Middle East between 1963 and 1999. The empirical analysis is performed using a unique panel of inequality estimates that cover ten countries over the selected period. This chapter estimates the effects of inequality and other variables on the intensity level of conflicts, using two different measures. We looked for specific economic and non-economic factors that might determine changes in conflicts in the region.

The data indicate that inequality has a negative relation with conflicts. More specifically, we find that a one point increase in inequality results in a decrease in conflict of 8.8% in the first model and 7.6% in the second model. As we have mentioned before the negative sign on the inequality variable indicates the special characteristics of a very imbalanced society where all opposition is crushed through heavy military presence and/or the very poor do not have the assets essential to initiate an armed rebellion (Baddely, 2005).

Inflation, military expenditure, and immigration have a positive relation with conflicts, while FDI as a percentage of GDP, growth, and workers remittance has a negative relation with conflicts. In the first model, the most important factor that affects conflicts is the immigration variable, where a one point increase in immigration results in a 213% change in the intensity level of a conflict. In the second model, immigration and workers’ remittance highly affect the conflict variable. An increase in immigration results in an increase in conflict of 142%, while an increase in workers remittance results in a decrease in conflicts of 145%. In both
models the idea of liberal peace is supported where oil exports and FDI lead to less conflict.

The path of research commenced in this chapter shows potential for future research, because it exposes factors that have an effect on conflicts in Middle Eastern countries. However, it by no means exhausts all variables affecting the dynamics of conflicts in the Middle East region, and further research is indicated.
CHAPTER 8

SUMMARY OF FINDINGS AND CONCLUSION

8.1 Concluding Remarks for the Thesis

The Middle East remains unstable, with nearly sixty years of Israeli-Palestinian conflict, which has included 26 crises and six major wars. The region hosted two wars in Iraq (1991 and 2003) with the most international participants, as well as the bloodiest interstate war of that period (Iran-Iraq, 1980–1988).

This dissertation examines distinctive issues related to conflict. The main aim of Chapter 2 is to understand conflicts from a multidisciplinary vantage point. In order to do that we will ask what are the economic incentives for and constraints on conflicts? Why in some societies do conflicts recur, while other societies retain their peaceful character? The analysis will be undertaken in the context of globalisation, which has spurred the twin forces of democratisation and privatisation in developing nations.

Chapter 3 has two main parts. The first argues that the introduction of market ethos and democratisation in developing nations has created a fragile economic and social system. We demonstrate the existence of a political equilibrium that maximises the probability of re-election of an incumbent government. This is an electoral equilibrium. In the equilibrium, we derive the optimal allocation of capital as well as
the optimal value of inter-sectoral terms of trade between agriculture and industry. The central issue is whether the political equilibrium is economically meaningful. We articulate two sets of conditions for it: first, the political equilibrium must ensure a minimal distribution for both industrial and agricultural agents, or a distribution failure will create survival problems for economic agents that will, in turn, drive conflict. Secondly, the political equilibrium and the consequent economic outcome must be stable so that small changes do not threaten a distribution failure.

These findings are of great importance: first, we demonstrate the existence of a region of capital allocation such that if the optimal allocation of capital lies in this specific region there does not arise any distribution failure. Allocation of capital within this safe region renders the system crisis-free and there is no economic source of conflicts. If the capital allocation is not contained within this safe region, problems arise — economic crises, distribution failures and conflicts characterise the outcome either in agriculture or in industry. Secondly, we establish that under a specific and reasonable condition, the postulated economic and political system will fail to give rise to a safe region. As a result, there will be crises, distribution failures, and conflicts, either in agriculture or in industry or both, depending on the allocation of capital between the sectors. Thirdly, we find that the dynamics of the political equilibrium can create enormous instability and fragility such that a chaotic regime will characterise the proposed economic and social outcome.

In the second part we highlight two types of conflicts, namely market conflicts and political conflicts and attempt to weave them together to illuminate an important intersection between the economy and the polity. We introduce conflicts at market level
in the usual fashion, as market rivalry — two prototype firms competing against each other for market shares. By applying simple game-theoretic reasoning, we obtain the equilibrium market outcome. However, the core of the problem remains: that the emerging market outcome, conduct of firms, market shares and take-home profits of rivals critically depend on their choices of strategic variables and, hence, on the nature of competition. Dixon (1986) introduces consistent conjectural variations to make the degree of competition endogenous in a strategic investment model. He establishes that the degree of competition is driven by investment decision of firms, since capital stocks impinge on costs of production. We exploit this intuition of Dixon by focusing on the impact of defence spending, as opposed to private capital, on costs of production. The degree of competition in the product market is therefore driven by the allocation of defence spending.

The introduction of defence spending in our model allows us to link the second type of conflict, the political conflict, with the first. Since, the availability of defence spending is fixed, it is modelled that there is no congruence of interests of agents coming from two distinct locations, as Hirsch (1977) notes: ‘what winners win, losers lose’. An allocation of defence spending will naturally entail political costs and benefits that a self-seeking government — driven by electoral motives — will try to exploit. An incumbent government will naturally choose an allocation to maximise the probability of its re-election. Our model on probabilistic voting has antecedents in the literature: Lindbeck and Weibull (1987) and Dixit and Londregan (1994) adapt the probabilistic model to examine public policies that redistribute income to narrow groups of voters. They assume that the various groups differ in their preferences for political parties and,
thereby, identify the political characteristics of a group that make it a suitable recipient of political largesse.

These authors study the major determinants of political success of a special interest group. Instead, we begin with the political characteristics of voters and then apply the probabilistic voting theorem to determine the electoral equilibrium that is driven by political largesse in the form of defence spending. This is how our model resolves political conflicts.

The resolution of political conflict can have serious ramifications for the product market because of its impact on the allocation of defence spending. This is a serious point to consider: traditional political theory highlights the failure of majority-rule voting caused by the absence of a stable electoral equilibrium. As a result, political instability can create significant instability in product markets. This is where we apply probabilistic voting theorem to highlight the existence of a stable voting equilibrium and establish that democratic political markets are well organised to promote the vote-maximising allocation of defence spending that will, in turn, lend stability to the product markets: the model predicts that the vote-maximising government will adopt an optimal allocation of defence spending that induces an electoral equilibrium that, in turn, maximises its chances of re-election. In this perspective, the nature of competition, structure industry and conduct of firms in an oligopolistic market critically depend on this electoral equilibrium and, hence, on voters’ preferences and characteristics. The degree of competition is thus identified with the equilibrium allocation of defence spending and becomes a continuous variable, rather than a binary variable. It captures intermediate situations between the pure Bertrand and Cournot cases.
We also find important comparative-static results that show that the structure, and conduct of firms, and the nature of competition in oligopolistic markets, will be sensitive to political characteristics.

Future extensions of the work are desirable on two fronts: voters’ preferences should be made dependent on the final good’s price and thus on the nature of competition. This extension enhances our understanding of the nature of equilibrium by providing circular interdependence between government policy and market outcomes. Secondly, an important extension is possible by allowing voters to ‘vote with their feet’. This extension once again introduces the circular interdependence between government policies and market outcomes.

Chapter 4 posits current conflicts as the product of continuing international chasms, splits and differences of political and social ideologies. We argue that conflicts are to some extent driven by international tension, or global, ideological and geo-political factors. Notwithstanding the global influence, local factors such as income inequality, income growth or lack of it, and political institutions, have an influence on conflicts.

This chapter is divided into three main sections. In first section we present a comprehensive outline of the evolution of global rivalry and conflicts since the First World War.
The second section develops a major theoretical model to explain how local conflicts can be created by international tension. In this section we examine conflicts mainly in the context of violence perpetrated by terrorist groups. This model depends on the endogenous partnership formation between terrorists and organisations across borders. The findings of the model explain how local and global issues of conflict can combine to give rise to an equilibrium conflict which has a tendency to self-perpetuate. The model also explains the incentive structures of terrorist organisations and their sizes.

The third section turns to a very important empirical regularity that characterises conflicts, especially terror attacks: these do not move in a linear fashion, but display the temporal path of cycles. We develop a theoretical model to explain why terrorist activities display this cyclical path. The final section turns to the question of whether terrorist activities and conflicts can be endogenously-driven, as opposed to the current emphasis of the literature dealing with the time-path of conflicts and terrorist activities. We develop a simple model of terror assets to explain the possibility of endogenous-driven cyclical paths for conflicts and terrorist activities.

In chapter 5 we propose a participatory conflict management procedure (CMP) that aspires to discover stable points for collaboration between confrontational parties. Stable points are mutual joint cooperative arrangements that diminish the probability of conflict re-escalation.

We work with a very small group (between 4 and 10 persons) to elicit in-depth data on the Arab-Israeli conflict from two experiments. The first experiment lets us
determine the main objectives for each actor. The second experiment determines which objectives are crucial, as well as the sensitivity of each objective for each party, using Saaty’s scale (see annex for more details). This enables us to elicit the sensitivity of each policy objective for each actor. Some objectives are more crucial than others and the sensitivity of most objectives differs between the parties. The procedure consists of two questions for each objective for each actor. The first question senses how large a concession in percentage from its most preferred position, for a given policy objective, should be, before the actor perceives the decrease as a significant loss in utility. The second question measures for each objective in percentages what the drop in utility actually is, if a significant concession (answer question a) occurs from its most preferred position.

MATHLAB (version 7, release 14) is used to run the data in order to verify the stability of all possible collaborative actions among the conflicting parties. After running the model we select the most common robust or stable neighbourhood position, which allows us to determine specific sites of agreement where conflicts may be considered less valuable than the concessions granted both sides. First, offering free access to places of religious and historical significance for both Arabs and Israelis. Second, the agreement between all parties (Israel, Palestine, Jordan, Lebanon, and Syria) on water allocation. Third, declaring a celebratory day which signifies the recognition and respect of each others’ sovereignty, territorial, and political independence.

In chapter 6 we present a fundamental theoretical analysis for a new index of conflicts beta ($\beta$) driven by international tension. In this section we show how to measure the extent to which local conflict in a country is driven by international
tension/ global factors. We then offer an empirical foundation to the beta index by calculating the beta values for 92 nations for which we have data from 1970–2004.

The second section explores how international tension traverses time and region, by examining the inter-temporal movement of the beta index of the 92 nations. To achieve that we introduce a new concept of beta mobility that is akin to measures of income mobility in the context of income distribution.

In third section we introduce an empirical model where the risk of conflicts due to international tension is considered a function of inequality, as well as of GDP growth, military expenditure, internationalisation index, political index, and index of openness. In this section we use panel data that allows us to control for unobservable time-invariant country-specific effects on the beta index of conflicts of a country. The results indicate that the signs of the parameters are almost all as hypothesised.

In chapter 7, the relationships between violent conflict and inequality are analysed. An econometric model is estimated using binary dependent variable techniques to capture the relation between violent conflict and inequality across Middle Eastern and Arab countries. We construct two models based on the theoretical model and actual data: the first is a dummy variable that takes a value of one when a conflict has resulted over 1000 battle deaths in a given year and country. The second is a dummy variable that takes a value of one if the conflict is completely internal, and another which is equal to one when the conflict involves an external actor.
For the purpose of this study we use the panel data that will allow us to control for unobservable time-invariant country-specific effects that result in a missing-variable bias. The two models estimate using a pooled model (ordinary least squares), fixed effects (accounting for heterogeneity across countries), and random effects (accounting for heterogeneity across countries and across time). The other independent variables collected are the growth rate, GDP per capita, inflation, military expenditure, FDI, population, military personnel, and immigration. The empirical analysis indicates a negative relation between inequality and conflict. Inflation, military expenditure, and immigration have a positive relation with conflicts, while FDI as a percentage of GDP, growth, and workers remittance have a negative relation with conflicts. In the first model, the most important factor that affects conflicts is the immigration variable; for the second model, immigration and workers’ remittance strongly affect the conflict variable.

7.2 Limitations and Future Studies

This research represents only a very small contribution to an increasingly sizeable body of literature concerning conflicts. Given the significance of the problems caused by conflicts, it is important that research in this field remains one of the primary focuses in future studies.

This thesis has achieved its main objectives and made a small contribution to the research. Nevertheless, we need to keep in mind that, as with any other academic investigation, this research is subject to many limitations in theoretical framework and data availability. These limitations should be kept in mind when considering the results of this research.
Any empirical research faces data limitations; this was the case in this study. Usually, the larger the sample size the more accurate and important the implications of the empirical results. However, in this research we had data limitations, especially in Chapter 5, where only nine countries were included in our sample, limiting the statistical implications of our results. It would be interesting to investigate the relation between inequality and conflicts in all Middle East and North African countries in a future study.

The data for inequality is drawn from the Estimated Household Income Inequality Data Set (EHII) — a global dataset derived from the econometric relationship between UTIP-UNIDO. The UTIP-UNIDO data set source computes inequality measures for nearly 3200 Country/year observations, covering over 150 countries. Unfortunately, this data covers the period from 1963–1999 only. This creates another limitation in data availability.

Finally, the path of research commenced in Chapter 5 shows potential, because it exposes factors that have an effect on violent conflicts in Middle Eastern countries. This study definitely does not exhaust all the variables explaining the dynamics of conflicts in the Middle East region, and further research here may be favourable.


———MidEast Web, Population of Ottoman and Mandate Palestine, Retrieved February 6, 2006, from MidEast Web online: [http://www.mideastweb.org/palpop.htm](http://www.mideastweb.org/palpop.htm)


9. Appendix

A Historical Account of the Conflicts in the Middle East

9.1 Accounts of the Conflicts in the Middle East before 1948

9.1.1 Introduction

This chapter traces the history of the modern conflict between Israel and Palestine from 4000 B.C.E. to 1948 C.E. It shows how Jews and Arabs diverged from a common source to become arch-enemies during the British Mandate over Palestine. It outlines the impact of World War II, the holocaust, treason, and terrorism on the Palestinian problem, and explains why Britain relinquished the Mandate in 1947, leaving the United Nations to resolve the land settlement problem. It demonstrates why this corrupted land settlement set the scene for almost 60 years of continuous war and terrorism in the Middle East.

9.1.2 Early History of the Region

‘No two historians ever agree on what happened, and the damn thing is they both think they’re telling the truth.’ -Harry S. Truman

In order to understand the Arab-Israeli conflict today, we need an overview of the history of Israel/ Palestine land. The area that is now called Israel/ Palestine is very small geographically (10,000 sq. miles at present) but huge in its historical importance. In addition to being home to the shrines of three religions, Israel/ Palestine was conquered by many invaders throughout the years.

The first known inhabitants of Israel/ Palestine were the Canaanites (the Levant) (Cattan, 1973). The Canaanites were a Semitic people with extraordinary industry and outstanding intelligence, who occupied Israel/ Palestine, Lebanon, and much of Syria and Jordan (Albright and Kunstel, 1990). H. G. Wells mentioned in his book *The Outline Of History: Being a Plain History of Life and Mankind* that

What is called Palestine to-day was at that time the land of Canaan, inhabited by a Semitic people called the Canaanites, closely related to the Phoenicians who founded Tyre and Sidon, and to the Amorites who took, Babylon and, under Hammurabi, founded the first Babylonian Empire (p. 73).

2. **The Egyptians (C. 1468–1200 BC)**

During this period Israel/ Palestine was part of Egyptian territory. The pharaoh left the Canaanites in control of their own territories with direct supervision from Egyptian and Canaanite commissioners. The Egyptians were astonished by the prosperous trade business of the Canaanite seaports of Gaza, Jaffa, and Acca, which traded goods far and wide.

3. **The Philistines (C. 1200–975 BC)**

The word Palestine is derived from the Philistines who lived in the southern coastal part of the country (Cattan, 1969; 1973). The Philistines, neither Arabs nor Semites, and also known as the Sea Peoples, originated from Crete. They attacked Israel/ Palestine and devastated the cities. Once established in Israel/ Palestine, they became the most powerful group there for more than two centuries.
4. **The Israelites the Kingdom of David (C. 975–925 BC)**

The Israelites were not the first inhabitants of Israel/Palestine but were invaders like others (Cattan, 1969). The conflict between the Philistines and the Israelites became unavoidable with the trade expansion of the Philistines into Arabia. In 975 BC the Israelites under the command of King David managed to defeat the Philistines, who were humiliated and never regained their supremacy. The successor to David was his son Solomon, most famous for the temple he built to offer sacrifices to God.

5. **The Canaanite Phoenicians (V. 925–700 BC)**

The Israelites and the Philistines conquered approximately three quarters of the Canaanite territories. As a result the Canaanites sailed to Tyre, where they established a vital city that became the centre of trade routes and gradually monopolised trade in the Mediterranean. Their strong trade powers led to a stronger army that invaded and conquered the Israel/Palestine region.


The Assyrians came from Iraq; their capital city was Nineveh. When they fought they destroyed the towns and replaced the populace with people from different regions. They became infamous for the cruelty of their torture, which struck terror into everyone’s heart. The Assyrians attacked Israel/Palestine and removed the residents to the Median Mountains, replacing them with colonists from Kutha in Iraq.
7. **The Babylonians (C. 586–539 BC)**

The Babylonians lived in the area between the Tigris and Euphrates Rivers: Iraq in the present day. In 612 BC the Babylonians attacked the Assyrian Empire, which immediately collapsed. They then attacked Israel/ Palestine, destroying Jerusalem and burning Solomon’s temple, and carried Jerusalem’s leading Jewish citizens back to Babylon. These people were well treated and became very rich merchants.

8. **The Persians (C. 539–332 BC)**

The Persians are Indo-Europeans, related to the Hittites, Romans, and Greeks. They created a huge empire that flourished for 200 years. In 539 BC the Persians destroyed the Babylonians and conquered the region from Asia Minor to India, including Turkey, Iran, Egypt, Afghanistan and Pakistan. In general, the Persians respected the customs and religious traditions of the diverse groups in their empire. They allowed the exiled Jews to return to the country in 538 BC (Cattan, 1969). The Jews living in Babylon returned to Jerusalem and built a second temple on the place where Solomon’s temple had stood.

9. **The Macedonian Greeks (C. 332–70 BC)**

The Macedonian Greeks crushed the Persians in Asia Minor and, upon reaching what is called now Lebanon Coast, found that its kings were absent with the Persian fleet in the Aegean. The Macedonian Greeks conquered what is in the present day Egypt, Syria, Israel/ Palestine, and Lebanon.
10. The Romans (63 BC–637 AD)

In 63 BC the Roman general Pompey invaded Israel/Palestine, initiating seven centuries of Roman rule. In 70 AD the Romans destroyed the Great Temple in Jerusalem during the first Jewish Revolt against them (Minnis, 2001). Jericho and Bethlehem were destroyed when Jews revolted again between 132 and 135 AD; and the Jews were banned from Jerusalem. The Romans bestowed the name Palestina on the land known today as Israel/Palestine, and changed the name of Jerusalem to Aelia Capitolina. The Romans either killed the Jews or sold them as slaves. The Jews who survived left the country, dispersing throughout the Middle East.

11. The Arabs (AD 637–1260)

The Romans sensed the pointlessness of defending Palestina against the Arabs, so the Patriarch expressed his willingness to hand the keys of Jerusalem to Caliph Omar Ibn-AlKhattab\(^{26}\) without using the sword. In 637 AD, Caliph signed Jerusalem surrender terms\(^{27}\) granting protection of the Christians, their property and churches. This was the first time that Jerusalem was conquered without slaughter. Many inhabitants converted to Islam, which became the major religion in the country (Cattan, 1969). The country remained under Arabian control for more than four centuries, with caliphs ruling first from Damascus, then from Baghdad and Egypt.

\(^{26}\) The Second Caliph 634 – 644 C.E.

\(^{27}\) It ran in part: ‘From the servant of Allah and the commander of the Faithful, Omar: The inhabitants of Jerusalem are granted security of life and property. Their churches and crosses shall be secure. This treaty applies to all people of the city. Their places of worship shall remain intact. These shall neither be taken over nor pulled down. People shall be quite free to follow their religion. They shall not be put to any trouble...’
12. The Crusaders (AD 1099–1291)

In 1095, Pope Urban II made a plea to free Jerusalem from the Arabs. Thousands gathered to fight the Moslems. Many extended their target to include other infidels, particularly Jews. On 15 July 1009 the Crusaders captured Jerusalem and began to massacre the city’s Muslims and Jews. Muslim, Christian, and Jewish sources agree that exceptional quantities of blood were shed in the conquest of Jerusalem (Gil, 1997). The Crusaders forbade Moslems and Jews to live in Jerusalem.

13. The Ayubid Arabs (AD 1187–150)

The Ayubid were Muslims with Kurdish origins, which came from what is now Iraq. The Ayubid commander Saladin managed to become the Sultan of Syria and Egypt. In 1187 AD, Saladin defeated the Crusaders in Hittin, after which he besieged and captured Jerusalem. In contrast to the Crusaders’ treatment of Muslims, Saladin offered forgiveness and a secure route home for the Crusaders and their families. The Jews returned to Jerusalem following Saladin’s victory.

14. The Mamluks (AD 1260–1516)

The Ayubid were dependent on Turkish men who served in their army. These Turks were called Mamluks (which means ‘owned’ in Arabic ) because they were captured in childhood and raised to become Muslim soldiers. The Mamluks became powerful, having the strongest organisation.

The Crusaders signed an agreement with the Mongols against the Moslims, and in 1258 the Mongols destroyed and burnt Baghdad’s libraries on their way
towards Jerusalem. In response, the Mamluks took control in Egypt and headed towards Jerusalem, where in 1260 AD they defeated the Mongols. The Mamluks destroyed the Crusaders’ strongholds along Israel/Palestine’s coastline as revenge for the Crusader alliance with the Mongols. Israel/Palestine became unimportant during the Mamluk period, and most of its ports were destroyed for fear of new Crusader attacks.

15. The Ottoman Turks (AD 1516–1917)

Israel/Palestine came under Ottoman rule after a bloody battle with the Mamluks in 1517 AD. The Ottoman Turks’ rule in Israel/Palestine was to last four centuries, during which time Israel/Palestine never formed a political administration of its own (Bickerton and Pearson, 1986). The Turks paid little attention to Jerusalem because they considered it unimportant both politically and strategically. The land was divided into four districts connected administratively to the province of Damascus and ruled from Istanbul. In the Ottoman period between 1516–1831 AD, Israel/Palestine and the other Arab countries suffered from lack of knowledge, illiteracy, disease, few medical services, and no developed ports. In November 1831, the long Dark Age reached an end when Ibrahim Pasha of Egypt invaded Israel/Palestine and opened Arabic schools, encouraging European missionaries to open schools to educate Christians.

The Ottoman Turks reoccupied the area in 1840 when Great Britain sided with them against Ibrahim Pasha. The Turks immediately closed the Arabic schools, but kept the missionary schools open. Europeans opened Consulates and Vice-Consulates in Jerusalem and other seaports interest in the region revived. As a
result, the Jews’ situation improved, and they revived the restricted Hebrew language. This eventually led to the founding of the Zionist movement. When World War I broke out, the Ottoman Empire sided with Germany against Great Britain.

16. Zionism

A group of Jewish academics in Eastern Europe established a political lobby group called Zionism during the 1880s. Its objective was the creation of an independent Jewish nation-state and the protection of Judaism and the Jewish tradition through the re-establishment of a Hebrew-based Jewish culture situated in the traditional Jewish homeland Eretz-Yisrael. Thomas Friedman says:

The Zionists called for the ingathering of the Jews from around the world in Palestine and the creation there of a modern Jewish nation-state that would put the Jews on a par with all the other nations of the world. Most of the early Zionists either ignored the presence of the Arabs already living in Palestine or assumed they could either be bought off or would eventually submit to Jewish domination (Friedman, 1995, p. 14).

Zionism was looked at as the solution to the Jewish dilemma, which was derived from two basic facts: the Jews were disseminated in various countries around the world; and in each country they formed a minority (Shlaim, 2001).

On 7 July 1882 a small group consisting of fourteen men and one woman landed in Jaffa, heralding the first modern wave of immigration to Israel/Palestine that lasted from 1882–1903 (Bickerton and Pearson, 1986). The opposition of Arab

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28 The Balfour Declaration: ‘His Majesty's Government view with favour the establishment in Palestine of a national home for the Jewish people, and will use their best endeavours to facilitate the achievement of this object, it being clearly understood that nothing shall be done which may prejudice the civil and religious rights of existing non-Jewish communities in Palestine, or the rights and political status enjoyed by Jews in any other country.’
leaders to the Jews’ increasing immigration and purchase of land led them to exert pressure on the Ottomans to prohibit Jewish immigration and land buying. However, hearing of the bankruptcy of the Ottoman Empire, Zionism leader Theodor Herzl met the Sultan of the Ottoman Turks in May 1901 and offered to pay a substantial portion of the Ottoman debt in exchange for a charter allowing Zionists to colonise Israel/Palestine. The Sultan refused Herzl’s offer, saying, ‘I prefer being penetrated by iron to seeing Palestine lost’. (Cattan, 1969) The Ottoman Regime suspended all land transfers to Jews when Zionists called for increased colonization in Israel/Palestine in 1905. During the Ottoman period relations between the three religions in Israel/Palestine was peaceful and stable, but this changed after the arrival of British troops in 1917. For the Arabs inside Israel/Palestine, Zionism was a greater danger than the British Mandate: unlike the British, who had no desire to colonise, the Zionists perceived themselves as natives of the land.

17. The British (1917–1948)

After the outbreak of World War I, the Turks were forced to surrender Israel/Palestine to the British forces under General Allenby in September 1918. Within five weeks of occupying Israel/Palestine, the British Foreign Secretary Arthur Balfour made on behalf of the British Government a historic declaration in which he promised to support Zionist plans for a Jewish national home in Israel/Palestine (Laqueur, 1968). This declaration is considered by many to be the root of the Palestinian tragedy and of Arab-Israeli conflict (Cattan, 1973). The British also made an agreement (called the Sykes-Picot Agreement) with French and Russian governments, whereby Palestine should be placed under international
administration (Laqueur, 1968; Reich, 1996). At the same time the British promised Husain, King of Hijaz and then Sharif of Mecca, that Israel/ Palestine would be included in the zone of Arab independence if an Arab revolution was launched against the Ottoman Empire (Laqueur, 1968). In this way the British made three jointly opposing promises regarding the future of Israel/ Palestine, the promises in the Sykes-Picot Agreement clashing with the promises made to both Zionists and Arabs (Peretz, 1996). These contradictory agreements, especially the one to Husain and the Balfour Declaration, set the stage for three decades of conflict during the British mandate on Israel/ Palestine.

There are two main conclusions that can be derived from the brief history of Israel/ Palestine land. First, the Muslims remained the inhabitants of Israel/ Palestine until the British Mandate. Second, the period of Jewish domination with complete independence was short compared with the history of Israel/ Palestine. Beatty, an archaeologist, stated in *Arab and Jew in the Land of Canaan*,

all these [different peoples who had come to Canaan] were additions, sprigs grafted onto the parent tree… and that parent tree was Canaanite… They [the Arab invaders of the 7th century AD] made Moslem converts of the natives, settled down as residents, and intermarried with them, with the result that all are now so completely Arabized that we cannot tell where the Canaanites leave off and the Arabs begin.

The Jewish Kingdoms were only one of many periods in ancient Palestine. The extended kingdoms of David and Solomon, on which the Zionists base their territorial demands, endured for only about 73 years… Then it fell apart… [Even] if we allow independence to the entire life of the ancient Jewish kingdoms, from David’s conquest of Canaan in 1000 BC to the wiping out of Judah in 586 BC, we arrive at [only] a 414 year Jewish rule.’(pp45-46.)
9.1.3 Jerusalem’s Importance for Muslims, Christians, and Jews,

Jerusalem is undoubtedly the most significant religious city in the world because it is the most holy city in Christianity and Judaism, and the third holiest in Islam. This is why Jerusalem offers one of the tensest issues in the Israel/Arab conflict. For Muslims the name proposes peace and matches strongly to the Muslim concept of the sacred; a place where peace reigns and conflict is excluded. If we look at the history of Jerusalem we see that it is marked by conflict more than by peace.

The question arises: how did Jerusalem become so important in Islam and to Muslims? First, Jerusalem is the first Kiblah\footnote{The Kiblah is the direction that Muslims must face when praying to God.} to the Muslims before God commanded the Kiblah be changed to Mecca. Second, Jerusalem witnessed the life and works of the greatest prophets and messengers of God. In Islam Makkah and Madinah are two sacred cities because of their relationship with the prophets Abraham, Ishmael, and Mohammed. Similarly Jerusalem is associated with the prophets David, Solomon and Jesus. Third, in 620 AD the famous event of Isra\footnote{Isra is an Arabic word that refers to the miraculous night journey from Mecca to Jerusalem.} and Miraj\footnote{Miraj is an Arabic word that refers to the ascension of Mohammed from Jerusalem to the Heavens.} (Night Journey and Ascension) occurred when Mohammed was taken on a Buraq\footnote{The Buraq is an animal, white and long, larger than a donkey but smaller than a mule, who would place its hoof at a distance equal to the range of vision.} from Mekka to Jerusalem and from there to the seven levels of heaven. This one-night journey creates a strong Muslim link with Jerusalem. Finally, in Jerusalem there is the Dome of the Rock, the earliest remaining Islamic monument, and the Al-Aqsa Mosque, which is associated with the Isra and Miraj (Ettinghausen and Grabar, 2003).
Jerusalem’s role in the ministry of Jesus provides it with enormous Christian significance, apart from its place in the Old Testament. Christians see Jerusalem as the place of the gift of the spirit, of the birth of the church. For Christians to be in Jerusalem is to be in their spiritual home. For Christians, Jerusalem is a tangible link with the salvation fulfilled through Jesus.

Jerusalem is a holy place in Judaism mainly because of the destroyed temple. Jerusalem has been considered the central city of Judaism since the year 1005 BC when David conquered it and made it the capital of his kingdom. After that the temple was built there, destroyed, and then rebuilt, several times. The Romans destroyed the last of these temples and the only thing remaining from then until now are the Wailing Wall, the walls that used to surround the temple and now the holiest site for Jews in Jerusalem and the world. The second most important place is Hebron, where Abraham was buried, and the third most important place is Mt. Sinai, where Moses received the covenant.

9.1.4 Demography in Israel/ Palestine before 1948

There have been two competing mythologies about Palestine circa 1880. The extremist Jewish mythology, long since abandoned, was that Palestine was ‘a land without people, for a people without land.’ (This phrase was actually coined by the British lord Shaftesbury in his 1884 memoir.) The extremist Palestinian mythology, which has become more embedded with time, is that in 1880 there were a Palestinian people; some even say a Palestinian nation that was displaced by the Zionist invasion. The reality, as usual, lies somewhere in between’ (Dershowitz, 2003, p. 23-25 his parentheses).

The demographic composition of Israel/ Palestine has played a crucial role in shaping the area. From the beginning, population data were used to confirm or reject the particular claims raised by either side. Jewish claims that Israel/ Palestine were
an empty land or with significantly few inhabitants, and thus its supreme argument for ownership is based on population. On the other hand, Arabs and Palestinian historians claim that a mainly Arab people have consistently inhabited Israel/Palestine. The main objective here is to examine changes in Israel/ Palestine population before 1948 in the light of the best available statistical data.

9.1.4.1 During the Ottoman Empire

The Ottoman Empire conquered Israel/Palestine in 1517 AD. It is difficult to find exact figures regarding the Israel/Palestine population during the Ottoman period for several reasons. First, Israel/Palestine were divided into districts that were connected to other provinces so there was no unique administrative district of Israel/ Palestine. Second, Arabs and Jews alike avoided Turkish censuses, to evade military service and taxes. Third, groups such as Bedouins, foreign residents, and illegal residents were not included in Turkish censuses. Finally, according to Justin McCarthy the Turkish census tended to undercount women and children (McCarthy, 1990). Since the data were vague, different sources provide different estimates.

1. Before 1800

Looking at table 9.1 we find that the total population of Israel/Palestine is characterised by major changes in composition. The Jewish population in Israel/Palestine was a majority in the first half of the 1st century. During the Byzantine period, between the 2nd and 6th centuries, the majority of the population were Christians. After the 7th century, with the rise of Islam and until the beginning of the British mandate, Muslims formed the majority in Israel/Palestine. Between 1533 and 1539 the Muslims in Israel/ Palestine numbered 145,000 and the Jews
5,000. During 1690 and 1691 around 94.4% of the total population in Israel/Palestine was Muslim. At the end of 1800, the total population of Israel/Palestine was estimated at 275,000, comprising about 246,000 (89.45%) Muslims, 22,000 (8%) Christians, and 7,000 (2.55%) Jews.

If we look at population size, we see a great decline after the 5th century, then minor growth ever since:

Table 9.1: Population in Israel/ Palestine by Religion Groups, 1\textsuperscript{st} Century-1800 – Rough Estimates, Thousands

<table>
<thead>
<tr>
<th>Year</th>
<th>Jews</th>
<th>Christians</th>
<th>Muslims</th>
<th>Total(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First half 1\textsuperscript{st} century C.E.</td>
<td>Majority</td>
<td>-</td>
<td>-</td>
<td>~2,500</td>
</tr>
<tr>
<td>5\textsuperscript{th} century</td>
<td>Minority</td>
<td>Majority</td>
<td>-</td>
<td>&gt;1\textsuperscript{st} century</td>
</tr>
<tr>
<td>End 12\textsuperscript{th} century</td>
<td>Minority</td>
<td>Minority</td>
<td>Majority</td>
<td>&gt;225</td>
</tr>
<tr>
<td>14\textsuperscript{th} century before Black Death</td>
<td>Minority</td>
<td>Minority</td>
<td>Majority</td>
<td>225</td>
</tr>
<tr>
<td>14\textsuperscript{th} century after Black Death</td>
<td>Minority</td>
<td>Minority</td>
<td>Majority</td>
<td>150</td>
</tr>
<tr>
<td>1533 – 1539</td>
<td>5</td>
<td>6</td>
<td>145</td>
<td>157</td>
</tr>
<tr>
<td>1690 – 1691</td>
<td>2</td>
<td>11</td>
<td>219</td>
<td>232</td>
</tr>
<tr>
<td>1800</td>
<td>7</td>
<td>22</td>
<td>246</td>
<td>275</td>
</tr>
</tbody>
</table>

\(^a\): Including ‘Others’: Druzes, other small religious minorities

Source: R. Bachi (1977)

2. Between 1860 and 1914

Table 9.2 shows huge anomalies between different sources. Perhaps Zionists exaggerated the number of Jews and underestimate the numbers of Arabs; perhaps Arab historians undercounted Jews and overstated the number of Arabs. According to Bachi, the number of Arabs (whether Muslim or Christian) in Israel/Palestine in 1893 was 489,200; he gives the number of Jews as 42,900 (Bachi, 1997). However, according to Beinin and Hajjar (1989), of 462,465 in Israel/Palestine in 1878, 403,795 were Muslims (including Druze), 43,659
Christians, and 15,011 Jews. According to Karpat (1978), there were 371,959 Muslims, 42,689 Christians, and 9,000 Jews in 1893. The Turkish Census estimated the number of Arabs in 1893 as 414,648 (Beinin and Hajjar, 1989). However, Ruppin argues that there were around 689,275 in Israel/Palestine during 1893, of whom about 600,000 were Arabs and 80,000 Jews (Avneri, 1984). A study by McCarthy claims that there were 411,000 Arabs in Israel/Palestine in 1860, 738,000 in 1890, and 738,000 in 1914 (McCarthy, 1990). A study by Rodinson states that there were 367,224 Arabs in 1878, 469,000 in 1893, and 525,000 in 1914 (Rodinson, 1968). Rodinson also estimates the number of Jews as 7,000 in 1870, 10,000 in 1893, and 60,000 in 1914 (Rodinson, 1968). Fattah estimates the number of Jews in 1908 had risen to 80,000: ‘when Sultan Abdul-Hamid II’s rule collapsed, it was estimated that the Jewish population of Palestine had risen to 80,000, three times its number in 1882, when the first entry restrictions were imposed’ (Fattah, 1999).

<table>
<thead>
<tr>
<th>Year</th>
<th>Bachi</th>
<th>Census</th>
<th>Rodinson</th>
<th>Ruppin</th>
<th>McCarthy</th>
<th>Beinin and Hajjar</th>
</tr>
</thead>
<tbody>
<tr>
<td>1860</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>411,000</td>
</tr>
<tr>
<td>1870</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>367,224</td>
</tr>
<tr>
<td>1878</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>447,000</td>
</tr>
<tr>
<td>1893</td>
<td>489,000</td>
<td>414,648</td>
<td>469,000</td>
<td>600,000</td>
<td>553,000</td>
<td></td>
</tr>
<tr>
<td>1912–1914</td>
<td>525,000</td>
<td>738,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: [http://www.mideastweb.org/palpop.htm](http://www.mideastweb.org/palpop.htm)

3. During the British Mandate between 1914 and 1948

After World War I, Britain gained control of Palestine and the League of Nations assigned Great Britain the mandate for Israel/Palestine. Britain divided the
region in two, the Palestine mandate west of the Jordan River, and the Emirate of Transjordan to its east. During the British mandate there were two censuses taken, in 1922 and in 1931. Table 9.3 shows that, according to estimates, the population in Israel/Palestine increased from 750,000 at the census of 1922 to 1,765,000 at the end of 1944. In this period the Muslim portion of the population increased from 589,000 to 1,061,000, although their proportion of the total population was falling (78.34% to 58.35%). In the same period the Jewish portion of the population increased from 84,000 to 554,000 and proportionally from 13% to 31% of the total.
Table 9.3: Approximate Population Growth in Mandatory Palestine

<table>
<thead>
<tr>
<th>Year</th>
<th>Source</th>
<th>Total</th>
<th>Moslems</th>
<th>Jews</th>
<th>Christians</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(No.)</td>
<td>(%)</td>
<td>(No.)</td>
<td>(%)</td>
<td>(No.)</td>
</tr>
<tr>
<td>1922</td>
<td>Census</td>
<td>752,048</td>
<td>589,177</td>
<td>11.14</td>
<td>71,464</td>
<td>7,617</td>
</tr>
<tr>
<td>1931</td>
<td>Census</td>
<td>1,033,314</td>
<td>759,700</td>
<td>16.90</td>
<td>88,907</td>
<td>10,101</td>
</tr>
<tr>
<td>1937</td>
<td>Estimate</td>
<td>1,383,320</td>
<td>875,947</td>
<td>63.32</td>
<td>109,769</td>
<td>11,520</td>
</tr>
<tr>
<td>1945</td>
<td>Survey¹</td>
<td>1,845,560</td>
<td>1,076,780</td>
<td>32.96</td>
<td>145,060</td>
<td>15,490</td>
</tr>
<tr>
<td>1947²</td>
<td>Projection</td>
<td>1,955,260</td>
<td>1,135,269</td>
<td>33.24</td>
<td>153,621</td>
<td>16370</td>
</tr>
</tbody>
</table>

1: These widely quoted numbers are apparently based on official estimates and were not from a special survey.
2: Figures for the Jewish population were estimated to include immigration. 650,000 is the accepted number. The estimate of ‘Others’ was based on average rates of increase in 1922-1945. The source [http://www.palestinerecorded.com/Acre/Maps/Story574.html](http://www.palestinerecorded.com/Acre/Maps/Story574.html) gives 608,250 for 1945 as a revised survey figure, and this is generally accepted. However, Rodinson and others list the survey numbers as if they are for 1946 rather than 1945 (Rodinson, 1968).
Motivated by Zionism and encouraged by British sympathy, the Jewish population increased as a result of immigration particularly in the 1930s (see table 2.4). A net immigration of 216,131 Jews was recorded between 1930 and 1939. After Hitler’s rise to power, there was organised illegal immigration to Israel/Palestine. Although two ships sank and two others were turned back by the British, thirteen ships delivered more than 15,000 illegal immigrants before the outbreak of World War II in 1939. The majority emigrated from different places in Middle Europe. Illegal migration reached its climax in 1935 with the arrival of 61,854 refugees, then started to reduce as a result of the Arab revolution that flared in Israel/Palestine in 1936. In the period 1940–1948, 110,585 immigrants were transferred to Israel/Palestine with the help of the Haganah, the main body involved in illegal immigration. According to the Israel Central Bureau of statistics, the total number of Jewish immigrants between 1919 and 1948 was about 483,000. The immigrants of the 1930s brought with them a great deal of capital, as well as skills and experience in industry, science, banking, medicine, law and international commerce. With the mandate, British capital and technology were introduced to Israel/Palestine, and the Jewish immigration was accompanied by European capital and European technology. This led by the 1930s to a higher standard of living for Palestinian Arabs, compared with that of Arabs in surrounding countries.
Table 9.4: Recorded Immigration and Emigration, Israel/ Palestine, 1930-1939

<table>
<thead>
<tr>
<th>Year</th>
<th>Immigration</th>
<th></th>
<th>Emigration</th>
<th></th>
<th>Net Immigration</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jews</td>
<td>Non-Jews</td>
<td>Total</td>
<td>Jews</td>
<td>Non-Jews</td>
<td>Total</td>
</tr>
<tr>
<td>1930</td>
<td>4,944</td>
<td>1,489</td>
<td>6,433</td>
<td>1,679</td>
<td>1,324</td>
<td>3,003</td>
</tr>
<tr>
<td>1931</td>
<td>4,075</td>
<td>1,458</td>
<td>5,533</td>
<td>666</td>
<td>680</td>
<td>1,346</td>
</tr>
<tr>
<td>1932</td>
<td>9,553</td>
<td>1,736</td>
<td>11,289</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1933</td>
<td>30,327</td>
<td>1,650</td>
<td>31,977</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1934</td>
<td>42,359</td>
<td>1,784</td>
<td>44,143</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1935</td>
<td>61,854</td>
<td>2,293</td>
<td>64,147</td>
<td>396</td>
<td>387</td>
<td>783</td>
</tr>
<tr>
<td>1936</td>
<td>29,727</td>
<td>1,944</td>
<td>31,671</td>
<td>773</td>
<td>405</td>
<td>1,178</td>
</tr>
<tr>
<td>1937</td>
<td>10,536</td>
<td>1,939</td>
<td>12,475</td>
<td>889</td>
<td>639</td>
<td>1,528</td>
</tr>
<tr>
<td>1938</td>
<td>12,868</td>
<td>2,395</td>
<td>15,263</td>
<td>1,095</td>
<td>716</td>
<td>1,811</td>
</tr>
<tr>
<td>1939</td>
<td>16,405</td>
<td>2,028</td>
<td>18,433</td>
<td>1,019</td>
<td>977</td>
<td>1,996</td>
</tr>
<tr>
<td>Total</td>
<td>222,648</td>
<td>18,716</td>
<td>241,364</td>
<td>6,517</td>
<td>5,128</td>
<td>11,645</td>
</tr>
</tbody>
</table>

a. ‘x’ indicates that emigration was not reported.

Source: Esco Foundation (1947). See [http://www.unu.edu/unupress/unupbooks/80859e/80859E05.htm](http://www.unu.edu/unupress/unupbooks/80859e/80859E05.htm)
There are several problems related with estimating Arab migration to Israel/Palestine. Arab immigration was unreported and unrecorded because most of it was illegal. According to all the reports of the period, Arab recorded immigration to Palestine was minimal, casual, and unquantifiable. For example, British records in 1934 show only 1,784 non-Jews legally immigrated and around 3,000 came illegally.

9.1.5 Conflicts between Arabs and Jews before 1948

Two groups come into conflict when one group has interests and goals inimical to the goals and interests of the other group (Rubin, Pruitt, and Kim, 1994). The conflict between the Arabs and Jews in the Middle East has taken different dimensions, such as Muslims versus Jews and Muslims and Arabs versus the West. During the Ottoman period, the first Zionist immigration to Israel/Palestine took place in 1880, but there were no direct conflicts during that period. At the end of Ottoman period Arabs living in Israel/Palestine began to feel threatened by Jewish immigration, which was increasing each year. After World War I, the coming of the British and the Balfour Declaration intensified the conflict. Britain was allocated control on Jordan, Iraq, and Israel/Palestine; Syria and Lebanon were given to France as mandate countries, based on the Sykes-Picot Agreement. Arabs felt that the British had betrayed them, since they expected Britain to fulfil its promise to create an independent Arab country or countries throughout the Middle East. Arabs inside Israel/Palestine opposed the British mandate because of the Balfour Declaration and the continuous Jewish immigration that threatened their position in the country.
The conflict between Arabs and Jews started when both the Arabs and Jews began to develop national consciousnesses and began to desire self-determination and sovereignty. Some historians declare that the true start of the Arab-Israeli conflict was between 1920 and 1921, when a man named Amin Al-Husseini\(^ {33} \) began propaganda against Jews who purchased large tracts of land from absentee land owners and expelled the Arabs living in these areas (Rowley and Taylor, 2006a). On March 1920, the first Arab public disturbance took place in Jerusalem, and violence increased between Arabs and Jews. After a speech by Amin Al-Husseini on April 4, 1920, Arabs destroyed the Jewish Quarter of Jerusalem, beating anyone they could find. The riot lasted for four days, and five Jews and four Arabs were killed. These developments lead to the founding of the Haganah\(^ {34} \), a Jewish military organisation, on June 15, 1920. A new wave of violence took place, this time in Jaffa, on May 1, 1921, when two groups of Jews began fighting each other. Arabs believed that they were under attack, and fighting between Arabs and Jews erupted and went on for several days. The causalities were 48 Arabs and 47 Jews killed, and 219 people wounded (Farsoun, 1997).

On August 15, 1929, there was a major incident between Arabs and the Jews over the Wailing Wall. The accident occurred when several hundreds of Betar raised a Zionist flag over the Wailing Wall, shouting, ‘the Wall is ours’. Arabs, hearing rumours that Betar members had attacked local residents and cursed the name of Mohammed, demonstrated on August 16 and marched to the Wall where pages from Jewish prayer books were burnt. The next day a Jew was killed. On August 20, Haganah members offered to evacuate the Jews from Hebron, but the Jews refused, stating that

\(^{33}\) He was the Mufti of Jerusalem and supported by the British  
\(^{34}\) A Hebrew word meaning ‘The Defence’
they trusted the Arab notables to protect them. After three days, Arabs attack them, angered by a rumour that Jews had killed two Arabs. The violence spread all over Israel/Palestine, although the worst killings happened in Hebron and Safad. In Hebron 64 Jewish men, women, and children were massacre, while many others were saved by hiding in their Arab neighbours’ houses or taking shelter at the British Police station (Kimmerling and Midgal, 2003). The Jewish survivors were obliged to leave their properties, which were occupied by Arabs. The aftermath of the 1929 Arab-Jewish conflict was the death 133 Jews and 116 Arabs; most of the Arabs were killed by British military action (Wasserstein, 2001). The British blamed Arabs for the violence, but noted that it was the result of Jews expelling cultivators after buying Arab land.

The main achievement of the 1929 conflict for the Arabs was the British decision to halt Jewish immigration. The Zionists used their access to members of the British Cabinet to pressure for a change to this ruling. The Palestinians, lacking this kind of influence on the British Cabinet, lost their case by default.

Zionists denied the existence of a problem by convincing themselves that Arabs would accept a Jewish state in Israel/Palestine because of the benefits that they would gain (Dowty, 2005). By the mid-1930s, both Arabs and Zionists looked forward to establishing a state in the area. David Ben-Gurion\textsuperscript{35} said, ‘We and they [Arabs] want the same thing. We both want Palestine’ (Teveth 1994). Hitler’s rise to power in 1933 increased European Jewish immigration to Israel/Palestine, which heightened tensions between Arabs and Jews (Hajjar and Beinin, 1988). Pressure

\textsuperscript{35} David Ben-Gurion became prime minister of the state of Israel when it was founded in May 1948.
increased between both sides, especially after the Histadrut, the Jewish Labour Federation, started to besiege Jewish firms and farms that hired Arab labour (Bickerton and Pearson, 1986). During that period, newly-arrived European Jews led in land purchases and Jewish settlement (see table 9.5). The Mufti Amin Al-Husseini established the Arab Higher Command, which called for general protest, and demanded the termination of Jewish immigration and immediate elections. The protest began by calling Arab workers to strike and boycott Jewish products. These actions turned into violence and Arab attacks began on railways, oil pipelines, and Jewish settlements. In October 1936 the strike ended and a short-term peace between Arabs and Jews existed for approximately a year. Following the report by the Peel Commission\textsuperscript{36} in September 1937, Arab violence against Jews renewed, and Jews responded more forcibly than before. British forces, with help from the Haganah and support from the neighbouring Arab regimes, crushed the Arab revolt in early 1939. They arrested or expelled the main Arab leaders, and left the Arabs inside Israel/Palestine without political leadership at time where their future was decided (Khalaf 1991). The result of the 1936-1939 revolt was 5,000 Arabs dead, 15,000 wounded, and 5,600 imprisoned. The Jewish and British tolls were 415 and 200 killed respectively. Although the British crushed the Arab revolt, it did pressurise them to reverse their policy in support of a Jewish national home (Kimmerling and Migdal, 2003). They issued a White Paper\textsuperscript{37} that limited future Jewish immigration and land purchases inside Israel/Palestine. Jewish immigration was limited to 75,000 persons within the next five years, and after that none would be admitted without Arab

\textsuperscript{36} It is formally known as the Palestine Royal Commission. This commission recommended that Israel/Palestine should be divided into Arab and Jewish States.

\textsuperscript{37} The key provisions of the White paper were: first, that it was not British policy that Israel/Palestine should become a Jewish or Arab state; Second, that Jewish immigration would be limited and the transfer of land from Arabs to Jews restricted; third, that Britain foresaw after ten years an independent state in Israel/Palestine sharing government between Arabs and Jews.
agreement; in addition Israel/Palestine would be granted its independence after ten years (Cattan, 1969). The Jewish replied to the White Paper by calling on the British to fulfil the promises of the Balfour Declaration, to open the gates of Israel/Palestine to immigration, and to establish a Jewish Commonwealth which could right the ‘age-old wrong to the Jewish people’ (Laqueur, 1968).

The 1936-1939 events received little attention at the time, but were a crucial stage in the confrontation between Arabs and Jews. After 30 years the military correspondent of the Israeli daily newspaper *Ha'aretz* noted,:

> with respect to the events of 1936, it seems to us that had they not happened in the manner and at the time in which they did in fact occur, it is doubtful that the Jewish community could have waged a war for independence eight years later. The Jewish community emerged from these dangerous 1936 events in a stronger position as a result of the strong support it received from the British government and army in Palestine.’ (El Kodsy and Lobel, 1970).

<table>
<thead>
<tr>
<th>Year</th>
<th>Dunumsª</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930</td>
<td>19,365</td>
</tr>
<tr>
<td>1931</td>
<td>18,585</td>
</tr>
<tr>
<td>1932</td>
<td>18,893</td>
</tr>
<tr>
<td>1933</td>
<td>36,991</td>
</tr>
<tr>
<td>1934</td>
<td>62,114</td>
</tr>
<tr>
<td>1935</td>
<td>72,905</td>
</tr>
</tbody>
</table>

ª: one Dunum equals approximately four acres.

### 9.1.5 Holocaust and Partition

The Second World War and the Holocaust played an important role in shaping the future of Israel/Palestine. On September 3, 1939, in response to 1.8 million German troops invading Poland, Britain declared war on Germany. Immediately Jewish
leaders expressed their loyalty to the British and their willingness to fight against Germany. In September 1939, David Ben-Gurion declared, ‘We shall fight the war against Hitler as if there were no White Paper, and we shall fight the White Paper as if there were no war.’ As there were some Arabs sympathetic to the Nazi cause, Arab reactions were less supportive of the British.

The Holocaust became a central part of Nazi activity. Hitler believed that Jews were responsible for Germany’s defeat in World War I. At first he attempted to push Jews to leave Germany, but the majority did not leave because they had nowhere to go. Countries like USA, Australia, and South American nations had restrictions on Jewish immigration. Nazi leadership decided on murdering the Jews. The Nazis employed several methods. One was obliging the victims to dig their own graves before they were shot and buried. Another way was locking the Jews in chambers and gas them. Afterwards the bodies were burned until nothing remained but ashes. Rudolf Hoess, the architect and commandant of the largest death camp, described this mass killing:

The 'Final Solution' of the Jewish question meant the complete extermination of all Jews in Europe. I was ordered to establish extermination facilities at Auschwitz in 6/1941. At that time, there were already in the General Government three other extermination camps: Belzek, Treblinka and Wolzek. These camps were under the Einsatzkommando of the Security Police and SD. I visited Treblinka to find out how they carried out their exterminations. The camp commandant at Treblinka told me that he had liquidated 80,000 in the course of one-half year. He was principally concerned with liquidating all the Jews from the Warsaw ghetto. He used monoxide gas, and I did not think that his methods were very efficient. So when I set up the extermination building at Auschwitz, I used Zyklon B, which was a crystallized prussic acid which we dropped into the death chamber from a small opening. It took from 3-15 minutes to kill the people in the death chamber, depending upon climatic conditions. We knew when the people were dead because
their screaming stopped. We usually waited about one-half hour before we opened the doors and removed the bodies. After the bodies were removed our special Commandos took off the rings and extracted the gold from the teeth of the corpses. (Jewish Virtual Library)

The Holocaust created greater sympathy throughout the Western world for the creation of a Jewish state (Dowty, 2005). The US president, Harry Truman, reflected the effect the Holocaust had on the Western world when he said,

the organised brutality of the Nazis against the Jews in Germany was one of the most shocking crimes of all times. The plight of the victims who had survived the mad genocide of Hitler’s Germany was a challenge to Western civilisation, and as a President I undertook to do something about it.. (Truman, 1965)

Western sympathy towards the Jews was reflected by generosity towards the Jews at the expense of Arabs living in Israel/ Palestine; for example, Truman demanded in 1946 the right of entry of 100,000 Jewish immigrants into Israel/ Palestine while the USA itself accepted only 4,767 displaced persons from Europe between December 1945 and October 1946 (Cattan, 1969).

After the Holocaust, the Zionists were convinced that if they had already established a Jewish state the Nazi first solution to deport its Jews would have worked and hundreds of thousands of lives would have been saved. The Zionists were keen to bring the remaining European Jews to Israel/ Palestine. The British after the Holocaust promised to support a Jewish state in Israel/ Palestine, but later broke their promise and doubled their efforts to prevent illegal immigration. In response, the Zionists began using force against the British to drive them out of Israel/ Palestine. Zionists bombed trains and killed British personnel. The British reacted by raiding the Jewish agency’s premises and taking huge number of documents, where some of
some of them highly sensitive. At the same time they arrested 2,500 Jews in Israel/ Palestine. Irgun, a militant Zionist organisation, bombed the King David Hotel\(^\text{38}\) in order to destroy the documents gathered by the British. On July 22, 1946, 15 to 20 Jews, dressed as Arab workers, packed explosives into milk containers and placed them in the basement of the Hotel. The explosion killed 91: 28 British, 41 Arab, 17 Jewish, and 5 others. The Irgun made it clear that they had obtained approval from the Haganah Command and the Jewish Agency to bomb the hotel.

In Britain, newspapers started to insist that the government resolve the conflict and stop endangering the lives of British troops. In early 1947, the British dumped the Israel/ Palestine problem in the lap of the United Nations (UN). The UN formed a United Nations Special Committee on Palestine (UNSCOP) to explore and resolve the Israel/ Palestine problem. UNSCOP members recommended that the country should be divided between Arabs and Jews.

On November 29, 1947 the UN General Assembly adopted the partition plan (General Assembly Resolution 181, adopted by a vote of 33 to 13, with 10 abstentions and one absentee), giving 55% of Israel/ Palestine to the Jews and 44% to the Arabs\(^\text{39}\) (Cattan, 1969; Dowty, 2005). The 1% left, Jerusalem and Bethlehem, were to become international zones according to the UN Resolution, with the United Nations itself as the administering authority (Bailey, 1990). The supra majority vote

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38 King David Hotel housed the British military command in Israel/ Palestine and was the headquarters of the British Criminal Investigation Division.

39 The countries that voted accepting the UN Resolution were: Australia, Belgium, Bolivia, Brazil, Byelorussia, Canada, Costa Rica, Czechoslovakia, Denmark, Dominican Republic, Ecuador, France, Guatemala, Haiti, Iceland, Liberia, Luxembourg, Netherlands, New Zealand, Nicaragua, Norway, Panama, Paraguay, Peru, Philippines, Poland, South Africa, Sweden, Ukraine, Uruguay, U.S.S.R, USA, Venezuela. Those who refused: Afghanistan, Cuba, Egypt, Greece, India, Iran, Iraq, Lebanon, Pakistan, Saudi Arabia, Syria, Turkey, Yemen. Countries absent: Argentina, Chile, China, Colombia, El Salvador, Ethiopia, Honduras, Mexico, United Kingdom, Yugoslavia. Absent: Thailand
was corrupt and in no sense constituted a calculus of consent (Buchanan and Tullock, 1962). The USA threatened four countries (Greece, Haiti, the Philippines, and Greece) to vote in favour to UN Resolution or face trade boycotts and/or the withdrawal of financial aid (Grose, 1988). Greece was the only country that withstood US pressure and voted against the UN partition resolution (Cattan, 1969). The President of the American University in Beirut, Dr. Stephen Penrose, criticised the US pressure:

The political manoeuvring which led to the final acceptance of the United Nations General Assembly of the majority report of UNSCOP provides one of the blacker pages in the history of American international politics. There can be no question but that it was American pressure which brought the acceptance of the recommendation for partition of Palestine … It was this effective American pressure for partition which is largely responsible for the terrific drop which American prestige took in all parts of the Arab and Muslim world. (Cattan, 1969)

The Jews accepted the UN Resolution, while the Arabs rejected it. Violence between Arabs and Jews spread all over Israel/ Palestine. The Zionist military forces were numerically smaller than the Arab military forces but better organised, trained and armed. Arabs inside Israel/ Palestine depended on their neighbour countries to help them fight. However, each Arab country had a different agenda. King Abdullah, King of Jordan, held a secret meeting with the Jews to prevent the creation of Palestinian state on one hand, and to annexe portions of the West Bank on the other hand. Syria wanted to take control of the northern part of Israel/ Palestine, including Jewish and Arab areas. King Ibn Saud (King of Saudi Arabia) stated that he would not use oil as a weapon against the West as a result of any differences over Palestine (Cohen, 1986).
9.1.6 Historic Peace Plans

David Ben-Gurion said once: ‘Why should the Arabs make peace? If I was an Arab leader I would never make terms with Israel. That is natural: we have taken their country…. Why should they accept that?’ (Goldman 1978).

All historic peace plans were based on territory, which has been more prominent in the Israel/Palestine conflict then in any conflict elsewhere (Herman and Newman, 2000). The notion of a single, bi-national state within which Jews and Arabs could live together was considered before 1948 as an academic conception, divorced from reality (Kelman, 1995). The four major peace plans that were suggested before 1948 were for one Jewish state, one Arab state, one binomial state, and two state partitions.

One Jewish State: The Zionists were asked to submit suggestions concerning Israel/Palestine to the Paris Peace Conference. On February 3, 1919, the Zionists presented a proposed single Jewish state that would include the land between the Mediterranean Sea and the Jordan River, in addition to Gaza and parts of Lebanon. A group of Jews from the USA (anti-Zionists) offered an alternative proposal, refusing the Zionist demand to turn Israel/Palestine a national home for the Jewish people. In their proposal they say,

But we raise our voices in warning and protest against the demand of the Zionists for the reorganisation of the Jews as a national unit, to whom, now or in the future, territorial sovereignty in Palestine shall be committed. This demand not only misrepresents the trend of the history of the Jews, who ceased to be a nation 2000 years ago, but involves the limitation and possible annulment of the larger claims of Jews for full citizenship and human rights in all lands in which those rights are not yet secure. For the very reason that the new era upon which the world is
entering aims to establish government everywhere on principles of true
democracy, we reject the Zionistic project of a ‘national home for the Jewish
people in Palestine’. (Tekiner, Abed-Rabbo and Mezvinsky, 1988)

The Zionists abandoned the One Jewish State plan when they recognised that they
could not become a majority in all parts of Israel/ Palestine.

One Arab State: From 1920 the Arabs and the Arab leaders called for a single
Palestinian Arab state in Israel/ Palestine. The Palestinian Arabs called for one single
state in which Jews and other religious minorities would be second-class citizens.
After World War II, the United Nations sent an Anglo-American Committee of
Inquiry to explore conditions inside Israel/ Palestine. The Arabs in Israel/ Palestine
submitted to this committee a report in which they rejected both partition and a bi-
national state as resolutions to the conflict. The Arabs called for the creation of one
Arab state that would assure the rights of Jewish minority. The report submitted to
the commission stated,

The Palestinian State would be an Arab state not in any narrow racial sense, nor in
the sense that non-Arabs should be placed in a position of inferiority, but because
the form and policy of its government would be based on a recognition of two
facts: first that the majority of the citizens are Arabs, and secondly that Palestine is
part of the Arab world and has no future except through close cooperation with the
other Arab states… The idea of partition and the establishment of a Jewish state in
a part of Palestine is inadmissible for the same reasons of principle as the idea of
establishing a Jewish state in the whole country. If it is unjust to the Arabs to
impose a Jewish state on the whole of Palestine, it is equally unjust to impose it in
any part of the country…. There are also serious practical objections to the idea of
a bi-national state which cannot exist unless there is a strong sense of unity and
common interest overriding the differences between the two parties. Moreover, the
point made in regard to the previous suggestion may be repeated here: this scheme
would in no way satisfy the Zionists. It would simply encourage them to hope for
more and improve their chances of obtaining it. (MidEast Web)
Binomial State: The President of the Hebrew University, Dr. Yehuda Magnes, and Martin Buber developed this idea. The Binomial state is based on the idea that the state would have Arab and Jewish cantons. This idea was submitted to the Anglo-American Committee; however the Arab states and Palestinian leaders rejected it.

Two State Partition Solution: To some, it is ‘the only possible solution to the Arab-Israeli conflict’ (Harkabi, 1992; Leibowitz, 1992). The Partition Solution was based on two possibilities: partition of Israel/Palestine into a new Jewish and a new Palestinian state, or partition between a Jewish state and one or more of the existing nearby Arab states (Dowty, 2005). The Peel Commission, established by the British after the eruption of Arab Revolt in 1936, presented this solution. In July 1937, the committee in its report called for the partition of Israel/Palestine into two unequal states (with an Arab state much larger than the Jewish state) and recommended the idea of population transfer:

Those areas, therefore, should be surveyed and an estimate made of the practical possibilities of irrigation and development as quickly as possible. If, as a result, it is clear that a substantial amount of land could be made available for the re-settlement of Arabs living in the Jewish area, the most strenuous efforts should be made to obtain an agreement for the transfer of land and population. In view of the present antagonism between the races and of the manifest advantage to both of them for reducing the opportunities of future friction to the utmost, it is to be hoped that the Arab and the Jewish leaders might show the same high statesmanship as that of the Turks and the Greeks and make the same bold decision for the sake of peace. (MidEast Web)

The Arabs rejected the partition and the Jews were split over it. The two state partition solutions were re-presented by the UN through UN General Assembly Resolution 181. The Jewish accepted the UN Resolution, but the Arab neighbour
countries preferred to break up the territories given for the establishment of Palestinian state between them, rather than see the creation of a Palestinian state.

9.1.7 Terrorism

There is a definition provided by The New Shorter Oxford English Dictionary: ‘the systematic employment of violence and intimidation to coerce a government or community into acceding to specific political demands’ (my italics). With respect to this definition we could say that both the Arabs and the Jews in Israel/Palestine used terrorism in their struggle for land before 1948; which violence was waged not on battlefields but in market places and villages (Kapitan, 1997).

The Arabs used terrorism against the Jews only, while the Jews directed terrorism against the Arabs and the British (Rowley and Taylor, 2006a). After the end of World War II, there were three essential armed Zionist organisations in Israel/Palestine, operating against both Arab and British with the precise intention of forcing them out of Israel/Palestine. These three groups were the Haganah, the Irgun, and the Stern Group. Jewish settlers before the British Mandate, called ‘Hashomer’, formed the Haganah. The Haganah had more than 16,000 trained men with a membership of 60,000 Zionist Jews, while the Irgun had between 3,000 to 5,000 trained men. The Stern Gang, Fighters for the Freedom of Israel (Lohamei Herut Yisra’el-Lehi), was formed by an officer who left the Irgun, taking with him more than 300 militants. These groups damaged public installations, blew up government offices, attacked military stores, and shot, kidnapped, and murdered British soldiers and government officials (Cattan, 1969).
After the 1936 Arab Revolt, the British began arming and training Zionist settlers. The Irgun between 1937 and 1939 killed over three hundred Arab civilians as revenge for Arab attacks on Jews. They killed 77 Arab men, women and children in three weeks in 1937 by planting bombs in Arab marketplaces (Smith, 2001). David Ben-Gurion regarded this act as so heinous that he thought it likely to have been committed by Nazi agents (Segev, 2000). Haganah commandos attacked a Palestinian family near Tel Aviv, killing 12, including the mother and six children on August 14, 1947.

During World War II, while most of the Zionists sided with Britain against the Nazis, there was one small group, the Stern Gang, which continued attacks to drive the British out of Israel/Palestine. This group proposed an alliance with Fascist Italy or even Nazi Germany in order to achieve their goal. The Stern Gang with the Irgun group tried to kill the British High Commissioner, Sir Harold MacMichael, and Lady MacMichael in Jerusalem, but failed. In November 1944, the Stern Gang assassinated Lord Moyne, the British military governor in Egypt. After World War II, the Irgun and the Stern Gang began murdering soldiers and policeman, and damaging British installations. These groups were regarded as terrorists by the British and much of the international community. Ben-Gurion referred to the Irgun as Jewish Nazis and compared Begin, later elected the Prime Minister of Israel, to Hitler (Segev, 2000).

The three groups, the Haganah, the Irgun, and the Stern Gang, decided to form a united Hebrew resistance movement in October 1945. Begin explains the struggle to expel the British from Israel/Palestine:
Our enemies called us terrorists…. And yet we were not terrorists. The original Latin word ‘terror’ means fear. If I am not mistaken the term ‘terror’ became current in political terminology during the French Revolution. The revolutionaries began cutting off heads with the guillotine in order to instil fear. Thenceforward the word ‘terror’ came to define acts of revolutionaries or counter-revolutionaries, of fighters for freedom and oppressors. It all depends on who uses the term. It frequently happens that it is used by both sides in their mutual exchange of compliments. The historical and linguistic origins of the political term ‘terror’ prove it cannot be applied to a revolutionary war of liberation. A revolution may give birth to what we call ‘terror’ as happened in France. Terror may sometimes be its herald, as what happened in Russia. But the revolution itself is not terror, and terror is not the revolution. A revolution, or a revolutionary war, does not aim at instilling fear. Its object is to overthrow a regime and to set up a new regime in its place. In a revolutionary war both sides use force. Tyranny is armed. Otherwise it would be liquidated overnight. Fighters for freedom must arm; otherwise they would be crushed overnight. Certainly the use of force also awakens fear. Tyrannous rulers begin to fear for their positions or their lives, or both. And consequently they begin to try to sow fear among those they rule. But the instilling of fear is not an aim in itself. The sole aim on the one side is the overthrow of armed tyranny; on the other it is the perpetuation of that tyranny. (Begin, 1977)

Arabs inside Israel/ Palestine tried to oppose Jewish settlement, which led to Arab terrorism against Jews from the early years of Jewish immigration. At the beginning, especially before 1920, small groups of unorganised Arabs engaged in violence against Jews. After the Arab Revolt in 1920, the attacks on Jews became more organised and widespread. The Arabs became even more violent during the second Arab Revolt (between 1936 and 1939), when many incidents of anti-Jewish Arab violence occurred in Israel/ Palestine. When the UN General Assembly adopted the UN Resolution for partition, terrorism between Arabs and Jews occurred with greater frequency and on a larger scale than ever before (Kapitan, 2004).
9.2 The History of Land Settlement and Cascading Conflicts in the Middle East since 1948

9.2.1 Introduction

After the state of Israel was declared on May 14, 1948, five major wars ensued between Israel and the Arabs. In this chapter we will examine these major wars and analyse the results achieved in each. We will also explore two cases of refugees: Jewish refugees from Arab countries and Palestinian refugees from Israel/ Palestine. In addition, we will consider the peace initiatives proposed to solve the Arab-Israeli conflict after 1948. Finally, we will analyse several cases of Palestinian and Jewish terrorism.

9.2.2 Arab and Israeli Conflicts

‘No war should begin, or at least, no war should be begun, if people acted wisely, without first finding an answer to the question: what is to be attained by and in the war.’

Karl Von Clausewitz

With the declaration of the state of Israel in 1948, a series of wars erupted between Israel and the Arab states. These included the 1948 Arab-Israeli war, the 1956 Suez/Sinai War, the Six Day War in 1967, 1973 Yom Kippur War, and the 1982 Lebanon invasion.

1. 1948 Arab-Israel War (1948 – 1949)

Britain decided to hand over Israel/ Palestine to the UN in 1947; consequently, the UN formed UNSCOP to explore and resolve the Israel/ Palestine problem
(Bailey, 1990; Hourani, 1991). On 29 November 1947, the General Assembly adopted the partition plan proposed by UNSCOP to split Israel/ Palestine into three parts (a Jewish state, an Arab state, and a corpus spectrum under international jurisdiction for the city of Jerusalem) (Lewis, 1993). After the adoption of the UN Resolution, bloodshed and fighting between Jews and Arabs were widespread over Israel/ Palestine. Between November 1947 and May 1948, Jewish forces were able to hold on to most of the territory allotted to the Jewish state, and even to overrun Arab areas (Dowty, 2005). By the time the British completed their withdrawal from Israel/ Palestine, the Zionists had declared the state of Israel\textsuperscript{40}, and the next day Arabs (Jordan, Egypt, Syria, Lebanon, Saudi Arabia, Iraq, and the Arabs inside Israel/ Palestine) declared war to prevent Jewish independence (Laqueur, 1968; Friedman, 1995). The Zionist military forces were numerically smaller than the Arab military forces but were well manned, trained, and equipped, and Arab military forces were largely ineffective in the face of significant Israeli military dominance. The Zionist military forces within weeks occupied around 80\% of the territory of Israel/ Palestine (20,850 square kilometres out of 26,323 square kilometres), except for the Gaza Strip, which was taken under Egyptian administration; the remainder was under Jordan’s control (Hourani, 1991; Cattan, 1969). The result of this war was, first, that in addition to Jews winning their war of independence and securing the state of Israel, it created about three quarters of a million refugee Palestinian Arabs (Bickerton and Klausner, 2001). This loss and the exile of these Palestinians are known in the Arabic world as ‘al-Nakba,’ or ‘The Cataclysm’. Second, the 6,373

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\textsuperscript{40} Establishment of Israel: ‘accordingly we, members of the People's Council, representatives of the Jewish community of Eretz-Israel and of the Zionist movement, are here assembled on the day of the termination of the British mandate over Eretz-Israel and, by virtue of our natural and historic right and on the strength of the resolution of the United Nations General Assembly, hereby declare the establishment of a Jewish state in Eretz-Israel, to be known as the state of Israel.’
Jews and 5,000 to 15,000 Arabs were killed. Arabs inside Israel/Palestine wound up with less territory than they would have had if they had accepted partition. The Palestinian Diaspora began, as hundreds of thousands of Arabs fled the new nation of Israel and moved to neighbouring Arab nations\textsuperscript{41} to live as refugees, awaiting the day they could return to their homeland.

The Arab countries signed armistice agreements with Israel in 1949, starting with Egypt (February 24), followed by Lebanon (March 23), Jordan (April 3) and Syria (July 20) (Cattan, 1969; Bailey, 1990). Iraq was the only country that did not sign an agreement with Israel, choosing instead to withdraw its troops and hand over its sector to Jordan’s Arab Legion.

2. The 1956 Suez/ Sinai War (29 October–4 November 1956)

In 1952, an Egyptian revolutionary named Jamal Abdul Nasser was the major mover among young army officers who overthrew the corrupt Egyptian monarchy (Dowty, 2005; Minnis, 2001). Nasser became the president of Egypt and a key figure of Arab nationalism until his death in 1970.

On July 19, 1956 the USA informed Egypt that it was cancelling a promised grant to build the Aswan High Dam, thus cancelling the loan from the World Bank for Reconstruction and Development, which was predicated on US support (Hiro, 2003). In response, an angry Nasser in an emotional speech on July 26 announced that he would nationalise the Suez Canal in order to pay the expenses of building the dam (Bickerton and Klausner, 2001). He also continued to buy

\textsuperscript{41} These countries are Lebanon, Egypt, Syria, and Jordan.
fighter aircraft, bombers, and tanks from Soviet bloc countries. The British and French governments regarded the Canal as crucial to their navies and trade, and feared that Nasser might close the Canal against their ships, or use it as a bargaining tool (Minnis, 2001). Israel saw a chance to weaken an over-powerful and aggressive neighbouring state (Hourani, 1991).

Israel, France, and Britain began planning an attack on Egypt, and France rushed arms to Israel (Bickerton and Pearson, 1986). On the afternoon of Monday 29 October, Israel attacked Egypt, dropping 400 paratroops at the eastern end of the Mitla Pass and initiating four land thrusts into Sinai (Bailey, 1990). The next day Britain and France issued an ultimatum to Egypt to withdraw from the Canal Zone. Egypt refused the ultimatum, which gave an excuse for British and French forces to attack the Canal. This action was not accepted by the two great powers, the USA and Soviet Union; the Soviet Union threatened to interfere on Egypt's behalf and the USA pressured Britain, France and Israel into agreeing to a cease-fire and eventual withdrawal from Egypt. The three forces were obliged to withdraw under the combined Soviet and American pressure, augmented by worldwide hostility and the danger of financial collapse (Hourani, 1991).

Although Egypt was defeated militarily, Egyptians were the big winners politically. The Canal became more Egyptian than before, and Nasser’s regime gained huge popular support over the Arab world (Morris, 2001).

42 The USA placed pressure on Britain when the US Federal Reserve Board undermined the pound-dollar exchange rate by selling large amounts of British pounds (Hiro, 2003).
43 Egypt: 1650 killed, 4900 wounded, and 6185 taken prisoner. Israel: 189 killed, 899 wounded, and 4 taken prisoner. France: 10 killed and 33 wounded. Britain: 16 killed and 96 wounded.
3. **1967 Arab-Israel War (6 days war from 5–10 June 1967)**

Although neither Israel nor the Arabs actually wanted war, a chain of events that began in mid-May 1967 made war inevitable (Dowty, 2005). In May and June 1967 there was a high level of tension between Israel and Syria. The Soviet Union forwarded information to Egypt about a heavy Israeli troop concentration on the Syrian border (Laqueur, 1968; Bickerton and Klausner, 2001). In response, Egypt put its armed forces on maximum alert and requested the withdrawal of UNEF (United Nations Emergency Forces)\(^{44}\) from all Egyptian soil. Egyptian troops and tanks began to move toward Sinai in order to replace the withdrawn UNEF troops. When Egyptian troops reached the Gulf of Aqaba, Nasser announced the closing of the Gulf to Israeli vessels or any vessels carrying goods to Israel (Hourani, 1991). This act made war unavoidable; Nasser had not consciously considered that (Morris, 2001).

On 5 June, Israel launched a surprise attack on Egypt, destroying aircraft on the ground and putting runways out of action (Cattan, 1973). The attack was more successful than expected, destroying most of the Egyptian air force (over 300 out of 340 Egyptian aircraft) with few Israeli casualties. On the same day, Israel attacked Syrian and Jordanian airfields and destroyed a number of aircraft on the ground (Cattan, 1973). In six days, Israel conquered an area three and half times larger than Israel itself; it occupied Sinai (61,000 square Kilometres), Jordan’s West Bank and East Jerusalem (5,700 square Kilometres), and the Golan Heights (1,200 square Kilometres) (Morris, 2001). Israel hoped to convert this spectacular

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\(^{44}\) These forces were placed in Sinai after the 1956 war.
military triumph into political success by using the occupied areas as bargaining
tokens for peace.

The outcome of this war for Israel was that, in addition to the conquest of vast
stretches of Arab territory, the IDF (Israel Defence Forces) became militarily
stronger than any combination of Arab states. The war also launched Israel’s
strategic joint venture with the USA, richly arming the IDF with American
weaponry (Oren, 2002). For the Arabs, the outcome was a humiliating loss with a
huge number of casualties\textsuperscript{45}, which led to the collapse of pan-Arabism and its
replacement with Islamic extremist ideas on one side, and the rise of Palestinian
nationalism on the other.

4. 1973 Arab-Israeli War (the October War 1973)\textsuperscript{46}

On October 6, 1973, on Yom Kippur, the Jewish Day of Atonement, probably the
most important holiday of the Jewish year, President Sadat of Egypt and
President Assad of Syria jointly launched a sudden attack against Israel (Rowley
and Taylor, 2006b). At first the Syrian Forces occupied part of the Golan Heights
while Egyptian forces crossed the Suez Canal and reached the Bar-Lev Line.
However in the next few days, the IDF crossed the Canal and created a defensive
position on the west bank, and obliging the Syrian troops to move back toward
Damascus. At the same time as the USA was making large airlifts to Israel, the
Soviet Union was making massive airlifts to Damascus and Cairo. The attacks
ended in a cease-fire forced by the influence of Super-powers, as neither the USA
nor the Soviet Union wished the war to escalate and perhaps drag them in.

\textsuperscript{45} The Arab casualties in the Six Day War were 21,000 killed, 45,000 wounded and 6,000 taken
prisoner; the Jewish casualties were 779 killed, 2,563 wounded, and 15 prisoners.
\textsuperscript{46} This war is called the Yom Kippur War in Israel and the Ramadan War in the Arab world.
October 1973 proved that Arabs could collaborate and that their forces could fight well when properly trained; it proved that Israel was not invincible (Bickerton and Klausner, 2001). The 1948, 1956, and 1967 wars had conditioned the Israelis to astonishing victories over the Arabs, and the 1973 war was considered a stinging slap in the face (Morris, 2001). This was the first war between the Arabs and Israel to be followed by political settlement; the outcome of this war was much more balanced than that of the 1967 war.

5. The 1982 Lebanon War

After the ‘Black September’ incident in Jordan, the PLO (Palestinian Liberation Organisation) was forced to move to Lebanon, a decision that led to disaster for Lebanon. Lebanon became the centre of the PLO’s social, educational, economic, and military institutions, and soon Palestinians had created a virtual state within a state (Wenger and Denney, 1990). The relation between the Lebanese and Palestinians collapsed on 1975 and resulted in open warfare. Syrian forces entered Lebanon in 1976 to assist in fighting the PLO.

On June 3, the Fatah group, a Palestinian militant group that is vigorously opposed to many of the principles of PLO, attempted to assassinate Israel’s ambassador in London (Bickerton and Pearson, 1986). Israel blamed the PLO and retaliated by bombing Palestinian refugee camps in Lebanon along with other

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47 Israel casualties: 2656 killed and 7250 wounded, Egypt and Syria casualties: 8528 killed and 19540 wounded (western analysis).

48 Several incidents led to ‘Black September’. First, King Hussein, King of Jordan, survived assassination attempts by Palestinians in both June and September. Second, the Palestinians began new forms of military activities against Israel such as hijacking planes. Finally, a group of Palestinians succeeded in assassinating the Jordanian Prime Minister in Cairo in November 1971. All these events encouraged King Hussein to use his troops to crush the power of Palestinian military groups inside his country and massacre Palestinians in their camps (Bickerton & Pearson, 1986).
PLO targets. The PLO responded in turn by shelling the Galilee, the northern part of Israel/Palestine. On June 6, 1982, Israeli forces began invading Lebanon in an operation called ‘Peace of the Galilee’ under the command of Defence Minister Ariel Sharon. According to the plan, the Israeli forces were to advance no further than forty kilometres inside Lebanon, marked by the Litani River, in order to create a security zone that would free northern Israel from rocket attacks.

Three Israeli divisions invaded Lebanon from all sides and reached their target in just four days, but were determined to drive the PLO out of Lebanon. Syrian forces inside Lebanon had strong Russian air defence that repelled Israeli air attacks on their positions; however, in a surprise attack the Israeli air force destroyed 17 out of 19 batteries. Israel troops pushed towards Beirut, where the PLO fought well and obliged the Israelis to stay outside the city. The Israeli forces besieging Beirut initiated random bombing to turn the public against the PLO, and precise bombing to kill top PLO leaders (Wright, 1983). A writer for *Time* magazine, described the siege of Beirut:

> All across West Beirut, hour after hour, came the shattering detonations in crowded city streets, the crump, crump, crump of exploding bombs and shells, and then, after the brilliant flashes of red, the rising clouds of destruction…. Twice last week the Israelis staged attacks on the besieged western areas of Beirut that in sheer destructive power, though not in causalities, wreaked devastation that stirred memories of the punishment inflicted on European cities during World War II and recalled the fate of Jericho, the enemy city that the ancient Israelites had laid waste. (Smith, 1982)

After 70 days of continuous Israeli bombardment of Beirut, the Lebanese leaders, who had up to that time supported the PLO, requested Yasser Arafat, the PLO
leader, to leave Beirut to end the suffering of the city and its people. An agreement was reached whereby 8,000 PLO fighters with their personal arms were sent out of Lebanon towards Jordan, Syria, Yemen, Sudan, Greece, and Tunisia (Cobban, 1984).

The 1982 war was estimated to cost 20,000 lives, most of them civilians (Bickerton and Pearson, 1986). Syrian forces were obliged to withdraw from Beirut and large parts of Lebanese territory (Perthes, 1997). The PLO lost its military infrastructure in southern Lebanon, and moved towards Tunisia, which became the new PLO headquarters. Israel’s most important achievement in the invasion was to drive the PLO forces away from its border (Dowty, 2005). The 1982 war led to the formation of Hezbollah, an Islamic resistance movement sponsored by Iran, which resisted Israel's continuing occupation of southern Lebanon.

6. The 2006 Lebanon War

This conflict started in July 2006 when Hezbollah fighters crossed the Israeli border from Lebanon and kidnapped two soldiers. Israel reacted with massive raids, artillery fire, a ground invasion of southern Lebanon, and air and naval blockades. Hezbollah responded by launching rockets into northern Israel. The conflict resulted in over a thousand people killed (mostly Lebanese civilians), approximately one million Lebanese and 300,000 Israelis displaced, and a severely damaged Lebanese civil infrastructure.

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49 This war is known in Lebanon as the July War and in Israel as the Second Lebanon War.
In an effort to end this conflict, the United Nations Security Council issued UN Security Council Resolution 1701\textsuperscript{50} on 11 August 2006. The Lebanese government accepted the resolution by the next day, and the Israeli government the day after.

\section*{9.2.3 Refugees and the Israeli-Palestinian population}

On 28 July 1951, the United Nations Conference of Plenipotentiaries on the Status of Refugees and Stateless Persons defined a refugee as a person who

\begin{quote}
owing to well founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable, or owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.
\end{quote}

Since the end of World War II, there have been many large groups of refugees: 9 million Koreans, 8.5 million Hindus and Sikhs leaving Pakistan for India, 6.5 million Muslims leaving India for Pakistan, 700,000 Chinese refugees in Hong Kong; 13 million Germans from East Europe reaching West and East Germany, thousands of Turkish refugees from Bulgaria, and finally Palestinian and Jewish refugees (Laqueur, 1968). In all these cases a solution has been reached by the integration of the refugees into their host countries, except in the case of Palestinian refugees, whose integration was obstructed by the Arab host countries.

\textsuperscript{50}The resolution demands: (a) full cessation of hostilities, (b) Israel to withdraw all of its forces from Lebanon in parallel with Lebanese, and the United Nation Interim Force in Lebanon (UNIFIL) deploying throughout the south, (c) Hezbollah to be disarmed, (d) full control of Lebanon by the government of Lebanon, (e) no paramilitary forces, including (and implying) Hezbollah, south of the Litani River.
9.2.3.1 Palestinian Refugees

The 1947 partition plan and 1948 war created a refugee problem (Laqueur, 1968), although there is ongoing debate between Israel and the Palestinians regarding the reason behind the creation of the problem. Defenders of Israel claim that the Palestinians left their home of their own free will at the request of Arab authorities (Laqueur, 1968). On the other hand, Arabs claim that the Zionist forces expelled them from their land (Said, 1994). Maybe the truth lies between the two, as Bickerton and Klausner suggest: ‘Arab Palestinians fled in some cases of their own free will, in some cases through fear; in other cases they were expelled’ (Bickerton and Klausner, 2001).

No one can say precisely how many Palestinians became refugees after the formation of the Jewish state (Kimmerling and Migdal, 2003). Arab estimations range between 900,000 and 1,000,000, while the Israeli estimation was 520,000 and the British 600,000 to 760,000 (Morris, 1987). According to UN statistics, the number of Palestinian Refugees was 656,000: 280,000 moved to the West Bank, 70,000 to Jordan, 100,000 to Lebanon, 4,000 to Iraq, 75,000 to Syria, 7,000 to Egypt and 190,000 to the Gaza Strip (Johnson, 1987).

The UN did not deal with the Palestinian refugees via its normal refugee machinery, but instead formed a new, separate agency, the United Nations Relief and Works Agency for Palestinian Refugees in the Near East (UNRWA), to provide shelter, food, medical care, dental care, and education (Dowty, 2005). The UNRWA, from its beginning on May 1, 1950 until now, has been the main provider of basic services to registered Palestinian refugees in Jordan, Lebanon, Syria, the West Bank, and the
Gaza Strip. At the end of June 2005, 4,283,892 Palestinian refugees were registered with UNRWA, an increase of nearly 468.5 per cent since 1950 (see table 2.6). In June 2005, 1,795,326 Palestinian refugees (41.9%) were registered in Jordan, 969,588 (22.6%) in the Gaza Strip, 690,988 (16.1%) in the West Bank; 426,919 (10%) in Syria and 401,071 (9.1%) in Lebanon.

Table 9.6: Number of Registered Palestinian Refugees

<table>
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<tbody>
<tr>
<td>Jordan</td>
<td>506,200</td>
<td>613,743</td>
<td>506,038</td>
<td>716,372</td>
<td>929,097</td>
<td>1,570,192</td>
<td>1,795,326</td>
</tr>
<tr>
<td>Lebanon</td>
<td>127,600</td>
<td>136,561</td>
<td>175,958</td>
<td>226,554</td>
<td>302,049</td>
<td>376,472</td>
<td>401,071</td>
</tr>
<tr>
<td>Syria</td>
<td>82,194</td>
<td>115,043</td>
<td>158,717</td>
<td>209,362</td>
<td>280,731</td>
<td>383,199</td>
<td>426,919</td>
</tr>
<tr>
<td>West Bank</td>
<td>-</td>
<td>-</td>
<td>272,692</td>
<td>324,035</td>
<td>414,298</td>
<td>583,009</td>
<td>690,988</td>
</tr>
<tr>
<td>Gaza Strip</td>
<td>198,227</td>
<td>255,542</td>
<td>311,814</td>
<td>367,995</td>
<td>496,339</td>
<td>824,622</td>
<td>969,588</td>
</tr>
<tr>
<td>Total</td>
<td>914,221c</td>
<td>1,120,889</td>
<td>1,425,219</td>
<td>1,844,318</td>
<td>2,422,514</td>
<td>3,737,494</td>
<td>4,283,892</td>
</tr>
</tbody>
</table>

a Figures are based on UNRWA registration records, which are updated continually. However, the number of registered refugees present in the Agency’s area of operations is almost certainly less than the population recorded.

b Until 1967, the West Bank was administered as an integral part of the Jordan field.

c This total excludes 45,800 persons receiving relief in Israel, who were the responsibility of UNRWA until June 1952.


Neither Arabs nor Israelis have had much success in finding a solution to the refugee problem. On the Arab side, the refugees are ignored or interned in camps, and apart from Jordan, have refused to grant citizenship to refugees (Lewis, 1995). According to the Arabs, the solution to the Palestinian refugees’ problem lies in the UN General Assembly Resolution 194 (paragraph 11), which resolves that:

refugees wishing to return to their homes and live at peace with their neighbours should be permitted to do so at the earliest practicable date, and that compensation should be paid for the property of those choosing not to return and for loss of or damage to property which, under principles of international law or in equity, should be made good by the Governments or authorities responsible;
Instructs the Conciliation Commission to facilitate the repatriation, resettlement and economic and social rehabilitation of the refugees and the payment of compensation, and to maintain close relations with the Director of the United Nations Relief for Palestine Refugees and, through him, with the appropriate organs and agencies of the United Nations.’ (Cattan, 1973)

Israelis argue that the Palestinians abandoned their properties voluntarily, so the international community should pay the compensation to the Palestinian Refugees in the Arab countries. In addition, the Israeli government is not prepared to allow the refugees to return; indeed, Ben-Gurion told the Cabinet on 16 June 1948 that Israel should ‘prevent their return’ (Bickerton and Pearson, 1986).

9.2.3.2 Jewish Refugees

For hundreds of years Jews lived in Arab countries such as Algeria, Egypt, Lebanon, Libya, Morocco, Syria, Tunisia, Iran, Iraq and Yemen. In 1945 there were around 856,000 Jews living in various Arab states (see table 9.7). After the 1947 UN Resolution for the partition of Israel/ Palestine, Arab countries vented their anger against Jews throughout the Middle East and North Africa. Even before the UN Resolution, Arab delegates warned that the partition of Israel/ Palestine might endanger Jews in Arab lands. An Iraqi diplomat said at the time ‘The masses in the Arab world cannot be restrained’ (Friedman, 2003).

Following the partition, the immediate effect on the Jews in Arab lands ranged from rebellion against them in Yemen and Syria to the withdrawal of citizenship in Libya and the confiscation of their property in Iraq. In Egypt in 1956, Jews were declared enemies of the state. By 1957, over half a million had either left or been expelled
from Arab lands (Bickerton and Klausner, 2001). Many of those looked for refuge in new state of Israel, where they were absorbed and became an essential part of the state (Gilbert, 2002). The Jewish government achieved a permanent economic integration of refugees within its small territory and provided homes, work, and citizenship to all Jewish refugees from Arab lands.
<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>Aden</td>
<td>8,000</td>
<td>800</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Algeria</td>
<td>140,000</td>
<td>130,000</td>
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<tr>
<td>Egypt</td>
<td>75,000</td>
<td>40,000</td>
<td>1,000</td>
<td>400</td>
<td>100</td>
</tr>
<tr>
<td>Iraq</td>
<td>135,000</td>
<td>6,000</td>
<td>2,500</td>
<td>350</td>
<td>100</td>
</tr>
<tr>
<td>Lebanon</td>
<td>5,000</td>
<td>6,000</td>
<td>3,000</td>
<td>400</td>
<td>Less than 100</td>
</tr>
<tr>
<td>Libya</td>
<td>38,000</td>
<td>3,750</td>
<td>100</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Morocco</td>
<td>265,000</td>
<td>200,000</td>
<td>50,000</td>
<td>18,000</td>
<td>5,230</td>
</tr>
<tr>
<td>Syria</td>
<td>30,000</td>
<td>5,000</td>
<td>4,000</td>
<td>4,500</td>
<td>100</td>
</tr>
<tr>
<td>Tunisia</td>
<td>105,000</td>
<td>80,000</td>
<td>10,000</td>
<td>7,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Yemen</td>
<td>55,000</td>
<td>3,500</td>
<td>500</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>TOTAL</td>
<td>856,000</td>
<td>475,050</td>
<td>72,600</td>
<td>32,190</td>
<td>Approx. 7,500</td>
</tr>
</tbody>
</table>

Sources: Roumani, Maurice. "The Jews from Arab Countries: A Neglected Issue". WOJAC, 1983
9.2.4 The Peace Proposals

Before the 1973 Arab-Israeli war, peace negotiations between the Arabs and the Israelis were minimal. After the war, there was mutual interest in resolving issues and reaching a signed peace. Egypt was the first to sign a peace agreement with Israel on March 26, 1979, followed by Jordan on October 26, 1994. There were numerous plans to settle the Israeli-Palestinian conflict, most of them focusing on major issues such as Jerusalem, the right of return for Palestinian refugees, borders, and Israeli settlements.

1. 1967 United Nations Resolution 242
2. The 1978 Camp David Accords
3. The 1982 Reagan Plan
4. The Madrid Conference
5. The 1993 Oslo Declaration of Principles
6. The 1994 Cairo Agreement
7. Israel-Jordan Peace Treaty
8. The 1995 Oslo Interim Agreement
9. The Wye River Memorandum
10. The 1999 Sharm el Sheikh Memorandum
11. The 2000 Camp David Proposal
12. The 2001 Taba Talks
13. The 2002 Arab Peace Initiative
15. The 2003 Roadmap for Peace
16. The 2003-2004 Sharon Disengagement Plan
9.2.5 Terrorism

Terrorism between Arabs and Jews, in both directions, has had a corrosive effect on the attitudes of average people toward each other, on their capacity to reject violence morally, on the low threshold of outrage that any decent society must maintain to be shocked by its own behaviour and to prevent itself from degenerating into brutality. As terrorism become normal, it becomes acceptable. It grows into routine. (David Shipler, quoted in Gambill, 1998)

Terrorism is a tactic likely to be used when one party is weaker than the other (Munger, 2006). After the 1948 ‘Diaspora’, Palestinians found themselves alienated from their land and weaker than the Jews, and terrorism was a way to approach their goal of a state. Supporters of the Palestinians see their acts of violence as the efforts of freedom fighters battling for their rights (Bickerton and Pearson, 1986). In the same way, supporters of Israel consider Israeli acts of violence as self defence.

9.2.5.1 Palestinian Terrorism

A number of Palestinian liberation movements developed in the 1950s with the objective of creating a Palestinian state and destroying Israel. The first organisation to be established was Fatah, in 1957, founded by a group of Palestinians outside Israel/ Palestine was and including Arafat. Fatah supported and conducted violent attacks against Israel and Israeli citizens in order to achieve its goal of creating a Palestinian state. Although established in the 50s it was not until 1965 that Fatah started carrying out violent attacks inside Israel/ Palestine through its military arm, Al-Asifa (the storm) (Cobban, 1984; Alexander and Sinai, 1989). The PLO was founded on June 2, 1964 by the Arab League to represent the Palestinian people. In
1969 Fatah managed to take control of the decision-making arm of the PLO and Arafat was appointed PLO chairman on February 3, 1969.

Following the 1967 Arab-Israeli war, the Popular Front for the Liberation of Palestine movement (PFLP) was established on December 11, 1967. The Popular Democratic Front for the Liberation of Palestine (PFLP) was founded on February 22, 1969 followed by the Palestinian Islamic Jihad (PIJ) in the 1970s. The Islamic Resistance movement (HAMAS) was founded in 1988 after the first Palestinian Intifada (Palestinian uprising), with the goal of establishing an Islamic Palestinian state in place of Israel.

Throughout the years, these Palestinian movements employed several types of violence against civilians, such as plane hijackings, suicide bombings, shooting attacks, and car bombings. At first, violence focused on the international arena; but now it is concentrated inside Israel/Palestine. In the following we will offer some examples as an overview of Palestinian terrorism.

After 1967, the scale of terrorism intensified when Palestinian movements began engaging in violent activities to broadcast their cause and force the Israeli government to free Palestinian prisoners. In mid-1968, the first airplane was hijacked: three members from PFLP hijacked an El Al airplane (Alexander and Sinai, 1989). The same group attempted to hijack five planes in September 1970, succeeding with four but failing to hijack the fifth, an El Al airliner with Israeli security personnel on board (Alexander and Sinai, 1989). The hijackers released their
hostages in exchange for the release of Palestinian prisoners, and the four planes were blown up.

The most infamous terrorist act took place at the Munich Olympics. On the morning of September 5, 1972, eight Palestinian terrorists raided the apartment that housed the Israeli team in the Olympic Village, killing two and taking nine hostages. In return for their hostages, the attackers demanded the release of 234 Palestinians and non-Arabs in Israel/ Palestine prisons, the release of two German terrorists, and safe passage to Egypt. After a day of unsuccessful negotiations, a skirmish between the German forces and the terrorists claimed the lives of all nine hostages, while the police captured three and killed five terrorists (Alexander and Sinai, 1989; Nasr, 1997; Minnis, 2001). It has been argued that Munich was a most significant terrorist attack: one that ‘thrust the Palestinian crimes into the world spotlight, set the tone for decades of conflict in the Middle East, and launched a new era of international terrorism’ (Reeve, 2001). One month after the Munich massacre, a Lufthansa plane on flight from Beirut to Ankara was hijacked; the hijackers released the plane after German authorities freed the Munich terrorists.

During the 26th anniversary of Israeli independence on May 15, 1974, three members of the Democratic Front for the Liberation of Palestine (DFLP), a group split from the PFLP, infiltrated from Lebanon by dressing as Israeli Defence Forces, and attacked a school in Ma’alot, an Israeli town near the Lebanese border. The attackers demanded the release of 23 Arabs and three non-Arabs jailed in Israel/ Palestine. When negotiations broke down, an Israeli unit stormed the building killing all the terrorists, but not before the terrorists killed 27 and wounded 70 (Alexander and
Sinai, 1989). Another massacre took place inside Israel/ Palestine on the morning of March 11, 1978, when a unit of 11 members came by Zodiac boat from Lebanon, landing on a beach near Tel Aviv where they killed an American photographer and hijacked a bus on the coastal highway. The attackers drove to Tel Aviv, shooting at passing cars from the bus. When they approached a police blockade, the attackers left the bus and fired missiles, killing 38 and injuring 71 (Deeb, 2003).

The first suicide attack occurred on July 6, 1989 when a Palestinian on a Tel Aviv-Jerusalem bus grabbed steering wheel, causing the bus to crash, and killing 14 and wounding 30.

### 9.2.5.2 Israeli Terrorism

Since the state of Israel was declared, Palestinians have faced ongoing terrorism from Israel. Throughout the years, Israel has eradicated hundreds of villages and thousands of homes. The three Zionist groups, the Haganah, the Irgun, and the Stern Gang, have committed relentless ethnic cleansing, using torture, shooting, bombing, and murder against the Palestinian people.

During 1948 the Haganah began an operation called ‘Nahshon’, planned to create a passage to Jerusalem through territories allotted to the Arab state under the partition plan (Krystall, 1998). The Irgun and Stern gang committed the Deir Yassin massacre as their contribution to ‘Nahshon’ operation. Early in the morning of Friday April 9, 1948, members these groups attacked Deir Yassin village, 5.5 km west of Jerusalem, and home to 750 Palestinian civilians. They killed between 100 and 254 people, most of them women, children and the elderly, according to different sources (Morris,
1987; Sharif and Nihad, 1987); there were claims of other atrocities during the attack, such as rape and mutilation (Bickerton and Pearson, 1986). This massacre was described by Jacques de Reynier, Chief Delegate of the International Red Cross:

Three hundred persons were massacred… without any military reason nor provocation of any kind, old men, women, children, newly-born were savagely assassinated with grenades and knives by Jewish troops of the Irgun, perfectly under the control and direction of their chiefs… large knives most of which were still bloodstained… Thereupon terror seized the Arabs and gave rise to movements of panic which were wholly out of proportion with the real danger. The exodus began and became nearly general. (Cattan, 1969)

News of the attack spread quickly all over Israel/ Palestine, and the Jews used vans with loudspeakers to broadcast messages in Arabic such as: ‘Unless you leave your homes, the fate of Deir Yassin will be your fate’ (Krystatt, 1998). As a result of this massacre and other incidents against the Palestinians, the Palestinians fled from four major villages in Jerusalem area: Lifta, Deir Yassin, Ein Karim, and El-Maliha (Mattar, 1983).

During the 1982 Israel invasion of Lebanon, another massacre took place in Sabra and Shatila, two Palestinian camps in Lebanon. On September 16, 1982 after the assassination of Gemayel, the leader of the Phalangist group (Lebanese Christian Militia), a group from the Phalange entered the camps armed with knives, hatchets, and firearms under the observation of their Israeli allies, who had encircled the area (Shahid, 2002). The Phalangists moved through the camps, slitting throats, shooting, axing, and raping. Kapeliouk, an Israeli journalist who was one of the first to enter Sabra and Shatila after the massacre, described the scene:

From the beginning, the massacre assumed huge proportions, according to those who escaped. Throughout those first hours, the Phalangist fighters killed hundreds
of people. They shot at anything which moved in the alleys. Breaking down the
doors of the houses, they liquidated entire families in the middle of their supper.
Residents were killed in their beds, in pyjamas. In numerous apartments, one
would find children of 3 or 4 years, also in pyjamas, wrapped in blood-soaked
blankets. But, often, the killers were not content just to kill. In very many cases,
the assailants cut off the limbs of their victims before killing them. They smashed
the heads of infants and babies against the walls. Women, and even young girls,
were raped before being assassinated with hatchets…Sometimes, [the killers] left
one single member of the family alive, killing the others before his eyes, so that
this unfortunate could afterwards tell what he had seen and been through’
(Cobban, 1984).

In 36 hours the Phalange group massacred an estimated 700–800 Palestinian civilians
(Dowty, 2005), although Kapeliouk puts the figure much higher, at 3,000 to 3,500
(Shahid, 2002). Israel denied involvement and placed the blame on the Phalangists.
The UN issued a resolution condemning the massacre and the US president blamed
Israel for the massacre (Shahid, 2002). Inside Israel/Palestine a huge demonstration
of 400,000 people (about 10% of Israel’s population) demanded the appointment of a
governmental investigating commission (Dowty, 2005). The commission was
established, and reached the conclusion that Israeli commanders bore indirect
responsibility for the massacre. This inquiry led Sharon, the Defence Minister at that
time, to lose his position; and Raful Eitan, the army Chief of Staff, was dismissed.

Since the 1970s, Israeli forces and the Mossad have assassinated several Palestinians
in terrorist attacks51. Throughout the 70s the Mossad assassinated several
Palestinians and Arabs who were thought to have connections with the Munich

51 The full list of Palestinians leaders killed from the 70s is: Abdel Wael Zwaiter, Dr. Mahmoud
Hamshari, Hussein Al-Bashir, Mohamad Yussef Al-Najjar, Kamal Adwan, Kamal Nasser, Zaiad
Muchasi, Mohammad Boudia, Abu Jihad, Fathi Shaqaqi, Yahya Ayyash, Jamal Abdul Raziq,
Massoud Ayyad, Jamal Mansour, Imad Abu Sneneh, Salah Sahade, Sheikh Ahmad Yassin, Abdel
Aziz Rantisi, Adnan Al-Ghoul, and Imad Abbas.
massacre, in an operation called ‘Wrath of God’. In this operation Ali Hassan Salmeh (the Red Prince), who was accused of being the man behind the Munich massacre, was blown up in his station wagon on January 22, 1979. In April 1988, the Mossad succeeded in murdering Arafat’s deputy, Abu Jihad, after invading his highly guarded residence in Tunisia.

This operation was authorised by Israeli Prime Minister Golda Meir in 1972 and lasted for more than 20 years (Reeve, 2001).
9.3 Proof of Proposition 4

With the specified utility functions the first order condition (6c) is reduced to

\[
\frac{G_1 - G_a}{G_2 - G_b} = \frac{n_2 S_2}{n_1 S_1} \quad (7a')
\]

Since the amount of resources for investing in defence spending is given at \( G^* \), the optimal allocation of \( G^* \) is given by:

\[
G_1 = \frac{G^* n_2 S_2 - n_2 S_2 G_b + n_1 S_1 G_a}{n_1 S_1 + n_2 S_2} \quad (7b')
\]

\[
G_2 = \frac{G^* n_1 S_1 + n_2 S_2 G_b - n_1 S_1 G_a}{n_1 S_1 + n_2 S_2} \quad (7c')
\]

We can simplify the above as

\[
G_1 = \frac{n_2 S_2}{n_1 S_1 + n_2 S_2} (G^* - G_b) + \frac{n_1 S_1}{n_1 S_1 + n_2 S_2} G_a \quad (7d')
\]

Hence \( G_1 = w_1(G^* - G_b) + G_a(1 - w_1) \) \quad (7a)

where \( w_1 = \frac{n_2 S_2}{n_1 S_1 + n_2 S_2} \) \quad (7b)

Similarly, \( G_2 = w_2(G^* - G_a) + G_b(1 - w_2) \) \quad (7c)

where \( w_2 = \frac{n_1 S_1}{n_1 S_1 + n_2 S_2} \) \quad (7d) QED.
### 9.2 Thomas Saaty Scale

<table>
<thead>
<tr>
<th>Intensity of importance</th>
<th>Definition</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Absolute Importance</td>
<td>The evidence favouring one policy over another is of the highest possible order of affirmation</td>
</tr>
<tr>
<td>6</td>
<td>Demonstrated Importance</td>
<td>A policy is strongly favoured and its dominance is demonstrated in practice</td>
</tr>
<tr>
<td>4</td>
<td>Essential or Strong Importance</td>
<td>Experience and judgment strongly favour one activity over another</td>
</tr>
<tr>
<td>2</td>
<td>Weakly Importance of first policy over the other</td>
<td>Experience and judgment slightly favour one activity over another</td>
</tr>
<tr>
<td>0</td>
<td>Equal Importance</td>
<td>Two policies contribute equally to the objective</td>
</tr>
<tr>
<td>-2</td>
<td>Weakly Less-Importance of first policy over the other</td>
<td>Experience and judgment slightly favour second activity over the first</td>
</tr>
<tr>
<td>-4</td>
<td>Essential or Strong Less-Relevant</td>
<td>Experience and judgment strongly disapproves one activity over another</td>
</tr>
<tr>
<td>-6</td>
<td>Irrelevant</td>
<td>A policy is strongly disapproved and its dominance is demonstrated in practice</td>
</tr>
<tr>
<td>-8</td>
<td>Absolutely Irrelevant</td>
<td>The evidence disapproved one policy over another is of the highest possible order</td>
</tr>
<tr>
<td>1, 3, 5, 7</td>
<td>Intermediate values between the two adjacent judgments</td>
<td>When compromise is needed</td>
</tr>
<tr>
<td>-1, -2, -5, -7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.3 Some Additional Tables and Notes for Israel/ Palestine during British Mandate and Ottoman Period

Table 9.8: Estimated Population of Palestine 1870-1946 According to Rodinson

<table>
<thead>
<tr>
<th>Year</th>
<th>Arabs</th>
<th>%</th>
<th>Jews</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870</td>
<td>367,224</td>
<td>98</td>
<td>7,000</td>
<td>2</td>
<td>375,000</td>
</tr>
<tr>
<td>1893</td>
<td>469,000</td>
<td>98</td>
<td>10,000</td>
<td>2</td>
<td>497,000</td>
</tr>
<tr>
<td>1912</td>
<td>525,000</td>
<td>93</td>
<td>40,000</td>
<td>6</td>
<td>565,000</td>
</tr>
<tr>
<td>1920</td>
<td>542,000</td>
<td>90</td>
<td>61,000</td>
<td>10</td>
<td>603,000</td>
</tr>
<tr>
<td>1925</td>
<td>598,000</td>
<td>83</td>
<td>120,000</td>
<td>17</td>
<td>719,000</td>
</tr>
<tr>
<td>1930</td>
<td>763,000</td>
<td>82</td>
<td>165,000</td>
<td>18</td>
<td>928,000</td>
</tr>
<tr>
<td>1935</td>
<td>886,000</td>
<td>71</td>
<td>355,000</td>
<td>29</td>
<td>1,241,000</td>
</tr>
<tr>
<td>1940</td>
<td>1,014,000</td>
<td>69</td>
<td>463,000</td>
<td>31</td>
<td>1,478,000</td>
</tr>
<tr>
<td>1946</td>
<td>1,237,000</td>
<td>65</td>
<td>608,000</td>
<td>35</td>
<td>1,845,000</td>
</tr>
</tbody>
</table>

- Figures are rounded.

Sources: The numbers in this table are estimates constructed from Ben-Arieh (1975); Scholch (1985); Encyclopedia Britannica, (1911); Encyclopedia of Islam (1964); UN Document A/AC 14/32 (1947); McCarthy (1981) Karpat (1978) Farell (1984); Khalidi (1971); Abu Lughod (1971).
Table 9.9: Population of Palestine, 1922-1942

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Moslems</th>
<th>Jews</th>
<th>Christians</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(No.)</td>
<td>(%)</td>
<td>(No.)</td>
<td>(%)</td>
<td>(No.)</td>
</tr>
<tr>
<td>1922</td>
<td>Census</td>
<td>752,048</td>
<td>589,177</td>
<td>78.34</td>
<td>83,790</td>
</tr>
<tr>
<td>1931</td>
<td>Census</td>
<td>1,033,314</td>
<td>759,700</td>
<td>73.52</td>
<td>174,606</td>
</tr>
<tr>
<td>1931</td>
<td></td>
<td>1,036,339</td>
<td>761,922</td>
<td>73.52</td>
<td>175,138</td>
</tr>
<tr>
<td>1932</td>
<td></td>
<td>1,073,827</td>
<td>778,803</td>
<td>72.52</td>
<td>192,137</td>
</tr>
<tr>
<td>1933</td>
<td></td>
<td>1,140,941</td>
<td>798,506</td>
<td>69.99</td>
<td>234,967</td>
</tr>
<tr>
<td>1934</td>
<td></td>
<td>1,210,554</td>
<td>814,379</td>
<td>67.27</td>
<td>282,975</td>
</tr>
<tr>
<td>1935</td>
<td></td>
<td>1,308,112</td>
<td>836,688</td>
<td>63.96</td>
<td>355,157</td>
</tr>
<tr>
<td>1936</td>
<td></td>
<td>1,366,692</td>
<td>862,730</td>
<td>63.13</td>
<td>384,078</td>
</tr>
<tr>
<td>1937</td>
<td></td>
<td>1,401,794</td>
<td>883,446</td>
<td>63.02</td>
<td>395,836</td>
</tr>
<tr>
<td>1938</td>
<td></td>
<td>1,435,285</td>
<td>900,250</td>
<td>62.72</td>
<td>411,222</td>
</tr>
<tr>
<td>1939</td>
<td></td>
<td>1,501,698</td>
<td>927,133</td>
<td>61.74</td>
<td>445,457</td>
</tr>
<tr>
<td>1940</td>
<td></td>
<td>1,544,530</td>
<td>947,846</td>
<td>61.37</td>
<td>463,535</td>
</tr>
<tr>
<td>1941</td>
<td></td>
<td>1,585,500</td>
<td>973,104</td>
<td>61.38</td>
<td>474,102</td>
</tr>
<tr>
<td>1942</td>
<td></td>
<td>1,620,005</td>
<td>995,292</td>
<td>61.44</td>
<td>484,408</td>
</tr>
</tbody>
</table>

Source: Esco Foundation (1947). (see http://www.unu.edu/unpress/unupbooks/80859e/80859E05.htm)

a. Exclusive of members of His Majesty's Forces (Great Britain).
c. The figures for 1931 and following years are as of 31 December of each year.

Table 9.10: Israel/ Palestine: Arab/ Jewish Population (1914-1946)

<table>
<thead>
<tr>
<th>Year</th>
<th>Jews</th>
<th>Arabs</th>
<th>Total</th>
<th>% of Jews to Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1914</td>
<td>60,000</td>
<td>731,000</td>
<td>791,000</td>
<td>7.585%</td>
</tr>
<tr>
<td>1918</td>
<td>59,000</td>
<td>688,000</td>
<td>747,000</td>
<td>7.898%</td>
</tr>
<tr>
<td>1922</td>
<td>83,790</td>
<td>668,258</td>
<td>752,048</td>
<td>11.141%</td>
</tr>
<tr>
<td>1931</td>
<td>174,606</td>
<td>858,708</td>
<td>1,033,314</td>
<td>16.897%</td>
</tr>
<tr>
<td>1941</td>
<td>474,102</td>
<td>1,111,398</td>
<td>1,585,500</td>
<td>29.902%</td>
</tr>
<tr>
<td>1944</td>
<td>554,000</td>
<td>1,211,000</td>
<td>1,765,000</td>
<td>31.388%</td>
</tr>
<tr>
<td>1946</td>
<td>608,225</td>
<td>1,237,334</td>
<td>1,845,559</td>
<td>32.956%</td>
</tr>
</tbody>
</table>

Sources by year:
1922 and 1931: British Census: Census conducted by the British Mandate Government.
Table 9.11: The table shows Jewish Immigration during the British Mandate

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Immigrants</th>
<th>Number of Illegal Immigrants</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1919</td>
<td>1806</td>
<td>-</td>
<td>1806</td>
</tr>
<tr>
<td>1920</td>
<td>8223</td>
<td>-</td>
<td>8223</td>
</tr>
<tr>
<td>1921</td>
<td>8294</td>
<td>-</td>
<td>8294</td>
</tr>
<tr>
<td>1922</td>
<td>8685</td>
<td>-</td>
<td>8685</td>
</tr>
<tr>
<td>1923</td>
<td>8093</td>
<td>-</td>
<td>8093</td>
</tr>
<tr>
<td>1924</td>
<td>12856</td>
<td>-</td>
<td>12856</td>
</tr>
<tr>
<td>1925</td>
<td>33801</td>
<td>-</td>
<td>33801</td>
</tr>
<tr>
<td>1926</td>
<td>13081</td>
<td>-</td>
<td>13081</td>
</tr>
<tr>
<td>1927</td>
<td>2713</td>
<td>-</td>
<td>2713</td>
</tr>
<tr>
<td>1928</td>
<td>2178</td>
<td>-</td>
<td>2178</td>
</tr>
<tr>
<td>1929</td>
<td>5249</td>
<td>-</td>
<td>5244</td>
</tr>
<tr>
<td>1930</td>
<td>4944</td>
<td>-</td>
<td>4944</td>
</tr>
<tr>
<td>1931</td>
<td>4075</td>
<td>-</td>
<td>4075</td>
</tr>
<tr>
<td>1932</td>
<td>9553</td>
<td>-</td>
<td>9553</td>
</tr>
<tr>
<td>1933</td>
<td>27682</td>
<td>2465</td>
<td>30327</td>
</tr>
<tr>
<td>1934</td>
<td>38244</td>
<td>4115</td>
<td>42359</td>
</tr>
<tr>
<td>1935</td>
<td>58050</td>
<td>3804</td>
<td>66128</td>
</tr>
<tr>
<td>1936</td>
<td>27910</td>
<td>1807</td>
<td>29717</td>
</tr>
<tr>
<td>1937</td>
<td>9855</td>
<td>681</td>
<td>10536</td>
</tr>
<tr>
<td>1938</td>
<td>11441</td>
<td>1427</td>
<td>12868</td>
</tr>
<tr>
<td>1939</td>
<td>16405</td>
<td>11156</td>
<td>27561</td>
</tr>
<tr>
<td>1940</td>
<td>4547</td>
<td>3851</td>
<td>8398</td>
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<tr>
<td>1941</td>
<td>3647</td>
<td>2239</td>
<td>5886</td>
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<tr>
<td>1942</td>
<td>2194</td>
<td>1539</td>
<td>3733</td>
</tr>
<tr>
<td>1943</td>
<td>8507</td>
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<td>1944</td>
<td>14464</td>
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<tr>
<td>1945</td>
<td>12751</td>
<td>370</td>
<td>13121</td>
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<td>1946</td>
<td>7850</td>
<td>9910</td>
<td>17760</td>
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<td>1947</td>
<td>7290</td>
<td>14252</td>
<td>21542</td>
</tr>
<tr>
<td>1948</td>
<td>2109</td>
<td>15065</td>
<td>17174</td>
</tr>
</tbody>
</table>

### Table 9.12: Human and Income poverty: Middle East and Arab Countries

<table>
<thead>
<tr>
<th>HDI Rank</th>
<th>Country</th>
<th>Human Poverty Index (HPI-1) Rank</th>
<th>Value (%)</th>
<th>1$ a day</th>
<th>2$ a day</th>
<th>National Poverty Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>Kuwait</td>
<td>13</td>
<td>7.8</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>35</td>
<td>Qatar</td>
<td>13</td>
<td>7.8</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>39</td>
<td>United Arab Emirates</td>
<td>17</td>
<td>8.4</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>58</td>
<td>Oman</td>
<td>17</td>
<td>8.4</td>
<td>...</td>
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<td>...</td>
</tr>
<tr>
<td>61</td>
<td>Saudi Arabia</td>
<td>17</td>
<td>8.4</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>84</td>
<td>Turkey</td>
<td>22</td>
<td>9.2</td>
<td>3.4</td>
<td>18.7</td>
<td>27</td>
</tr>
<tr>
<td>86</td>
<td>Jordan</td>
<td>22</td>
<td>9.2</td>
<td>3.4</td>
<td>18.7</td>
<td>27</td>
</tr>
<tr>
<td>88</td>
<td>Lebanon</td>
<td>22</td>
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<td>3.4</td>
<td>18.7</td>
<td>27</td>
</tr>
<tr>
<td>91</td>
<td>Tunisia</td>
<td>22</td>
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<td>3.4</td>
<td>18.7</td>
<td>27</td>
</tr>
<tr>
<td>94</td>
<td>Iran</td>
<td>22</td>
<td>9.2</td>
<td>3.4</td>
<td>18.7</td>
<td>27</td>
</tr>
<tr>
<td>104</td>
<td>Algeria</td>
<td>22</td>
<td>9.2</td>
<td>3.4</td>
<td>18.7</td>
<td>27</td>
</tr>
<tr>
<td>106</td>
<td>Occupied Palestinian Territories</td>
<td>9</td>
<td>6.6</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>108</td>
<td>Syrian Arabic Republic</td>
<td>31</td>
<td>13.6</td>
<td>...</td>
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<td>...</td>
</tr>
<tr>
<td>112</td>
<td>Egypt</td>
<td>48</td>
<td>20</td>
<td>3.1</td>
<td>43.9</td>
<td>16.7</td>
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<tr>
<td>126</td>
<td>Morocco</td>
<td>68</td>
<td>33.4</td>
<td>&lt;2</td>
<td>14.3</td>
<td>19</td>
</tr>
<tr>
<td>147</td>
<td>Sudan</td>
<td>69</td>
<td>34.4</td>
<td>...</td>
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<tr>
<td>153</td>
<td>Yemen</td>
<td>82</td>
<td>38</td>
<td>15.7</td>
<td>45.2</td>
<td>41.8</td>
</tr>
</tbody>
</table>

Table 9.13: Armed Conflicts in Middle East Countries, 1963 – 1999\textsuperscript{53}.

<table>
<thead>
<tr>
<th>Location</th>
<th>Reason for conflict</th>
<th>Opposition Organisation</th>
<th>Year</th>
<th>Intensity Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>Government</td>
<td>Govt Takfir wa’l Hijra (Exile and Rédemption), MIA (Mouvement Islamique Armée Armed Islamic Movement), FIS (Front Islamique du Salut/ Islamic Salvation Front), GIA (Groupe islamique armé: Armed Islamic Group), GSPC (Groupe salafiste pour la prédication et le combat: Salafist Group for Preaching and Combat)</td>
<td>1991-92</td>
<td>Minor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1993-99</td>
<td>War</td>
</tr>
<tr>
<td>Algeria – Morocco</td>
<td>Territory (Common Border)</td>
<td></td>
<td>1963</td>
<td>Minor</td>
</tr>
<tr>
<td>Egypt</td>
<td>Government</td>
<td>Al-Gama’a al-Islamiyya (Islamic Association)</td>
<td>1993-98</td>
<td>Minor</td>
</tr>
<tr>
<td>Iran</td>
<td>Government</td>
<td>Mujahideen e Khalq</td>
<td>1979-80</td>
<td>Minor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1981-82</td>
<td>War</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1986-88</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1991-93</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1997</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1999</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td>Territory (Kurdistan)</td>
<td>KDPI (Kurdish Democratic Party of Iran)</td>
<td>1966-68</td>
<td>Minor*\textsuperscript{54}</td>
</tr>
</tbody>
</table>

\textsuperscript{53} Table 3 demonstrates the incidence of armed conflict in Middle Eastern Countries during the period 1963-1999, classified according to intensity level and type of rebel and insurgent groups.

\textsuperscript{54} Possibly war in 1966–68.
<table>
<thead>
<tr>
<th>Year(s)</th>
<th>Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979-80</td>
<td>War</td>
<td>APCO (Arab Political and Cultural Organisation) 1979-80 Minor</td>
</tr>
<tr>
<td>1981</td>
<td>Minor*</td>
<td></td>
</tr>
<tr>
<td>1982</td>
<td>War</td>
<td></td>
</tr>
<tr>
<td>1983-88</td>
<td>Minor*</td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>Minor*</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td>Minor*</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>Minor*</td>
<td></td>
</tr>
</tbody>
</table>

**Iran**
- Territory: (Arabistan)
- APCO (Arab Political and Cultural Organisation)
- 1979-80 Minor

**Iran – Iraq**
- Territory: (Various)55
- 1974 Minor

**Iraq**
- Government
- Military faction
- SCIRI (Supreme Council for the Islamic Revolution in Iraq)
- 1980-88 War
- 1982-84 Minor
- 1987 Minor
- 1991 War
- 1992-96 Minor*58
- KDP (Al-hizb al dimuqraati al-kurid: Kurdish Democratic Party of Iraq), PUK (Patriotic Union of Kurdistan)57
- 1961-63 War
- 1964 Minor*
- 1965-66 War
- 1967-68 Minor*
- 1969 War

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55 Notably the Shatt-al-Arab, but also islands in the Strait of Hormuz as well as territory along their common land border. By 1982, the stated incompatibility had widened to include governmental power in addition to territorial dispute.

56 In 1991, Kuwait, supported by the Multinational Coalition comprising troops from Argentina, Australia, Bahrain, Bangladesh, Belgium, Canada, Czechoslovakia, Denmark, Egypt, France, Greece, Honduras, Italy, Morocco, Netherlands, Niger, Norway, Oman, Pakistan, Portugal, Qatar, Saudi Arabia, Senegal, Spain, Syria, United Arab Emirates, United Kingdom and USA.


<table>
<thead>
<tr>
<th>Conflict</th>
<th>Year</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iraq-Kuwait*</td>
<td>1970</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td>1973</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td>1974-75</td>
<td>War</td>
</tr>
<tr>
<td></td>
<td>1976-78</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td>1988</td>
<td>War</td>
</tr>
<tr>
<td></td>
<td>1989-90</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td>1991</td>
<td>War</td>
</tr>
<tr>
<td></td>
<td>1992-93</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td>1996</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td>1997</td>
<td>Minor*</td>
</tr>
<tr>
<td>Israel-Palestine</td>
<td>1963-64</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td>1965-88</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td>1989</td>
<td>Minor*</td>
</tr>
<tr>
<td>Israel-Egypt</td>
<td>1967</td>
<td>War</td>
</tr>
</tbody>
</table>

* E.g. Hamas, Islamic Jihad, PFLP-GC, Hizbollah and al-Aqsa Martyrs Brigade. For the period after 1988 it has been possible to be more exact in the coding, and more precise information is thus given for these years.
<table>
<thead>
<tr>
<th>Conflict</th>
<th>Geographical Location</th>
<th>Year(s)</th>
<th>Conflict Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israel-Jordan</td>
<td>Territory (West Bank)</td>
<td>1967-1970</td>
<td>Minor*</td>
</tr>
<tr>
<td>Israel-Syria</td>
<td>Territory (Golan Heights)</td>
<td>1967-1973</td>
<td>Minor</td>
</tr>
<tr>
<td>Lebanon</td>
<td>Government</td>
<td>1975</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td>Various Organisations, Syria, Israel</td>
<td>1976-1979</td>
<td>War</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1980-1982</td>
<td>War</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1983-1988</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1989-1990</td>
<td>War</td>
</tr>
<tr>
<td>Lebanon</td>
<td>Government</td>
<td>1966</td>
<td>Minor</td>
</tr>
<tr>
<td></td>
<td>Military faction</td>
<td>1979-1981</td>
<td>Minor</td>
</tr>
<tr>
<td></td>
<td>Muslim Brotherhood</td>
<td>1982</td>
<td>War</td>
</tr>
<tr>
<td>Turkey</td>
<td>Territory (Northern Cyprus)</td>
<td>1974</td>
<td>War</td>
</tr>
</tbody>
</table>

60 Possibly war in 1970.

61 Some of the main groups include the Progressive Socialist Party/Lebanese National Movement, Phalangist militia (Lebanese Forces), Lebanese Front, PLO, Mourabitoun, Lebanese Army, Amal, Hezbollah, SLA (South Lebanese Army), LCP (Lebanese Communist Party), PFLP-GC (Popular Front for the Liberation of Palestine-General Command), SSNP (Syrian Socialist Nationalist Party), Lebanese National Resistance Front, Popular Nasserite Organization, Lebanese Baath Party, Syria, Israel and Iran (Revolutionary Guard); all active during all or part of the conflict.

62 Possibly war in the years 1977–79 and 1983–84
<table>
<thead>
<tr>
<th>Government</th>
<th>Devrimci sol (Revolutionary Left)</th>
<th>1991-92</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Territory (Kurdistan)</td>
<td>PKK (Partiya karkeren Kurdistan: Kurdistan Worker’s Party)</td>
<td>1984-86</td>
<td>Minor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1987-91</td>
<td>Minor*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1992-97</td>
<td>War</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1998-</td>
<td>Minor*</td>
</tr>
<tr>
<td>Morocco</td>
<td>Government</td>
<td>Military faction</td>
<td>1971</td>
</tr>
<tr>
<td>Morocco-Mauritania</td>
<td>Territory (Western Sahara)</td>
<td>Polisario (Frente popular de liberación de Saguia el Hamra y Rio de Oro: Popular Front for the Liberation of Saguia al Hamra and Rio de Oro)</td>
<td>1975-80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1981-89</td>
<td>Minor*</td>
</tr>
<tr>
<td>Tunisia</td>
<td>Government</td>
<td>Résistance armée tunisienne (Tunisian Armed Resistance)</td>
<td>1980</td>
</tr>
</tbody>
</table>

| Saudi Arabia | Government | Juhayman movement | 1979 | Minor |

| North Yemen\(^6^3\) | Government | Royalists | 1972-75 | Minor |
|                     |            |          | 1965    | Minor |
|                     |            |          | 1966-67 | War |
|                     |            |          | 1968-70 | Minor |
|                     |            |          | 1980-82 | Minor*\(^6^4\) |

\(^6^3\) Supported by troops from Egypt 1962–70.

\(^6^4\) Possibly reached the cumulative intensity of 1000 battle-related deaths in 1980–82.
<table>
<thead>
<tr>
<th>Conflict</th>
<th>Parties</th>
<th>Year(s)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Yemen – South Yemen</td>
<td>Government/Territory (common border)</td>
<td>1978-79</td>
<td>Minor</td>
</tr>
<tr>
<td>South Yemen</td>
<td>Territory (Aden/South Yemen)</td>
<td>United Kingdom vs. NLF (National Liberation Front), FLOSY (Front for the Liberation of South Yemen)</td>
<td>1964-67</td>
</tr>
<tr>
<td>Yemen</td>
<td>Government</td>
<td>Faction of Yemenite Socialist Party</td>
<td>1986</td>
</tr>
<tr>
<td>Muscat and Oman</td>
<td>Territory (South Yemen)</td>
<td>Democratic Republic of Yemen</td>
<td>1994</td>
</tr>
<tr>
<td>Muscat and Oman</td>
<td>Government</td>
<td>PFLOAG (Popular Front for the Liberation of the Occupied Arab Gulf), South Yemen</td>
<td>1972-75</td>
</tr>
</tbody>
</table>

Note: * Minor armed conflict: at least 25 battle-related deaths in that year and fewer than 1000 battle-related deaths during the course of conflict. War: at least 1000 battle-related deaths in that year. Names of the opposition organisations are given in the local language, if available, and in English. The latest version of this document can always be found at [http://www.prio.no/cwp/armedconflict/](http://www.prio.no/cwp/armedconflict/) and [http://www.ucdp.uu.se/research/UCDP/our_data1.htm](http://www.ucdp.uu.se/research/UCDP/our_data1.htm)