Program in
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**THE EVOLUTION OF ISRAEL'S
MILITARY EXPENDITURES
1960-1983**

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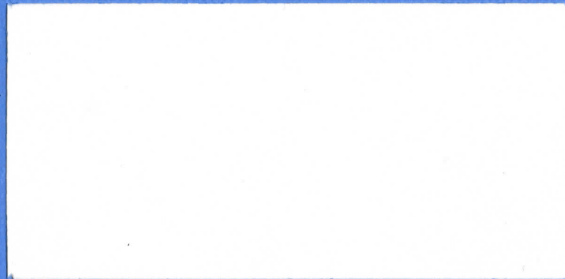
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The Evolution of Israel s Military Expenditures 1960-198ɔ[*]
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Abstract

A mathematical simulation model of Israeli defense spending since 1960 is developed its parameters estimated using data from official Israeli sources and its empirical fit evaluated *via* the dynamic trajectory fitting technique The three components modeled are the domestic defense budget U S military aid to Israel and Israeli defense purchases Over two-thirds of the variance in each of these components is captured by the model Israeli military expenditures were found to be influenced by security concerns as reflected in the arms race with the Arabs and war involvement and by political and economic variables such as elections inflation and military aid

Major Characteristics of Israel s Military Budget

Israel is frequently described as a nation in arms characterized by civilian control over its military as well as fragmented boundaries between its army and society (Luckham 1971 Ben Dor 1975 Horowitz 1977) Citizens of Israel are often viewed as soldiers on eleven months leave and the country s military budget as the largest (per capita) in the world And indeed the Israeli military budget amounts to more than $5 billion per year (Heller 1984) or about $1400 per capita Israel s defense budget presents a unique case in several respects

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First it is characterized by very high growth rates It is not unusual for total Israeli military expenditures to grow annually by more than 50% (in constant prices) Examples of such yearly increases occurred during 1956 1967 and 1973 years also characterized by Israeli war involvement

The military budget also consumes a large portion of the country s overall budget In the mid-1980s defense items account for about 30% of the total budget The ratio of military to total central government expenditure in Israel is reported to be the highest in the world (Arms Control and Disarmament Agency 1984)

Third the military budget has evolved in an environment of continuous conflict Israel has been constantly involved in military conflicts in the Middle East In the four decades since its independence Israel engaged in six wars (the War of Independence in 1948 the Sinai campaign of 1956 the Six Day War of 1967 the War of Attrition in 1969-1970 the Yom Kippur War in 1973 and the Lebanese War in 1982-1985) and in numerous other military campaigns such as preventive strikes and reprisals against Arab terrorist bases Israel faces a permanent declared threat of physical destruction (Kimmerling 1983) and a severe quantitative military inferiority of approximately 1 5 in terms of military personnel and about 1 1 6 in military expenditures -- according to one estimate (Barkai 1980 23)

There is also a substantial gap between Israel s external defense needs and its financial ability to pay for them Consequently a large component of the Israeli military system almost one-fourth (Kochav 1983 50) is financed through a military aid program (grants and loans) which primarily comes from the United States Israel is currently the largest recipient of American military aid

Economically Israel operates under conditions of three-digit hyper inflation (about 400% in 1984) and its defense budget involves three different currencies Israeli shekels--for purchases and services in Israel U S dollars for military procurement in the U S and a small sum of about $150 million typically devoted to weapon systems procurement in Western Europe (Hershko 1985 p 4)

Israeli decision-making regarding the military budget is also responsive to so-called *bottom up* pressures Due to Israel s security needs and the perceived military threat Israeli decision makers (at least until recent years) have been sensitive to pressures by the military establishment to increase military spending (see Peri 1983 pp 213-215 Consequently the Israeli military budget exerts an influence upon the size of the overall national budget and not *vice versa* as often characterizes so-called top-down systems such as the United States These features of the Israeli military budget that distinguish it from other nation-states make it important to identify the causal mechanisms that shape its evolution

To date studies of the Israeli military system have concentrated on such heterogeneous aspects as the Israeli army (Luttwak and Horowitz 1975) Israeli conventional and nuclear dilemmas (e g Aronson 1977 Horowitz 1982 Feldman 1982 Evron 1985) the Israeli military in politics (e g Ben Dor 1975 Perlmutter 1969 Peri 1983) the military-industrial complex (Klieman 1984 Mintz 1985b) the military and the economy (see Barkai 1980 Berglas 1983 McGuire 1982 and Zussman 1983) and the military and Israeli society (e g Lissak 1984 Kimmerling 1983) Given the centrality and importance of the military budget in Israel s political economic and social affairs it is important to seek an explanation of trends in Israeli military spending as well

In this article we present a model of Israels military expenditures including domestic spending and arms imports from 1960 the earliest year for which complete data are available to 1984 This model seeks to incorporate those unique features of the Israeli case while at the same time permitting some generalizations to emerge The mathematical model is analyzed the parameters estimated empirically using data from official Israeli sources and the results are evaluated with an eye toward the future evolution of Israeli military spending patterns

The Model

The Israeli military budget is a complex document consisting of more than 10 000 line items (see Hershko 1985 p 7) While the details of the Israeli military budget are secret and are presented for approval only before the important Foreign Policy and Security and Finance (Joint) Committee of the Israeli Parliament and to the Israeli government a series of interviews with top Israeli defense officials have enabled us to glean some important aspects of the process of defense budgeting and to elucidate major determinants of military spending in Israel (Mintz 1985a)

The point of departure in our current effort is the assumption that the Israeli military budget consists of two sets of expenditures domestic defense expenditures which normally account for more than 50% of the total budget and military imports the bulk of the remaining items The former is primarily earmarked for such budget items as compensation of employees in the defense sector purchases and services from the domestic economy and construction while the latter consists mainly of imports of weapon systems (see Mintz 1985a p 291 for a numerical breakdown)

The model of the evolution of Israeli military expenditures assumes that different mechanisms explain each set of expenditures Four major explanations

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for fluctuations in Israeli defense expenditures are intertwined in this model two are related to national security the other two are economic The military explanations are the Mid-East wars and the Israeli reaction to Arab military intensification while the economic factors are inflation and the amount of military aid Israel is receiving The impact of the former two is basically to increase defense spending however high levels of inflation and the amount of military aid are thought to constrain military spending

The first part of our model addresses the first of these two major components domestic defense expenditures This component of military spending is represented in equations [1] and [2] in Table 1

The first of these equations portrays the budget requests as being driven by three forces defense imports (Y_5) war involvement (X_1) and the percentage increase in Egyptian Syrian and Jordanian military expenditures (X_2) Defense imports consisting mainly of procurement of new military equipment influence the domestic defense budget since the acquisition of new military equipment normally requires the expansion of maintenance and operations programs Thus defense imports tend to place an upward pressure on the domestic defense budget and do not we hypothesize involve tradeoffs of the kind McGuire (1982) has identified in Israeli resource allocation related to defense policy making During periods of war involvement in which a high number of Israeli casualties occur additional pressure is felt upon the defense needs since war involvement (X_1) also invariably leads to replacement of military equipment that is destroyed or shown to be obsolete on the battlefield These pressures we propose will lead to increases in the budgetary request Finally no model of contemporary and historical defense spending in Israel would be complete without inclusion of some direct measure of the impact of the perceived threat that Israeli decision-makers face daily To the extent that the Arab states are

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increasing their military expenditures Israeli defense planners will feel compelled to request increases in the resources allocated to the domestic defense budget

Table 1   A Mathematical Model of Israeli Military Expenditures
Domestic Defense Spending and Defense Imports, 1960-1984

Budget Requests

[1] $Y_1 = \beta_1 Y_5 + \beta_2 X_1 + \beta_3 X_2$

Domestic Defense Expenditures

[2] $\dfrac{dY_2}{dt} = \beta_4(Y1 - Y2) - \beta_5 X_3 + \beta_6 X_4$

Israeli Military Aid Target

[3] $Y_3 = \beta_7 X_2 + \beta_8 X_5 + \beta_9 X_1$

[4] $\dfrac{dY_4}{dt} = \beta_{10}(Y_3 S_1 - Y_4)$

Defense Imports

[5] $\dfrac{dY_5}{dt} = \beta_{11}(Y_4 - Y_5)S_1 + (1\ 0 - S_1)(B_{12})((\beta_{13}X_2 + \beta_{14}X_5) - Y_5)$

Total Military Expenditures (Identity)

[6] $Y_6 = Y_2 + Y_5$

Variable Definitions

Y_1 = Requested Domestic Defense Budget
Y_2 = Domestic Defense Expenditures
Y_3 = Israeli Military Aid Target
Y_4 = Military Aid from the United States
Y_5 = Defense Imports
Y_6 = Total Military Expenditures

X_1 = War (Casualties)
X_2 = Annual Percentage Change in Arab Military Expenditures
X_3 = Inflation
X_4 = Election Year (1 = yes else = 0)
X_5 = Israel Defense Forces Intensification Program (1 = yes else = 0)

S_1 = Military Aid Granted from United States (1 = yes, else = 0)

Thus Equation [1] portrays the hypothesized relationship between the military budget requests and three linear additive components defense imports war involvement and changes in Arab military expenditures

Equation [2] describes the actual evolution of Israeli expenditures The primary mechanism is an adaptive one that drives expenditures (Y_2) toward the requests as defined in equation [1] (i e (Y_1)) The rate at which the actual

and desired converge is captured in the adjustment coefficient β_4 Due to the security threat to Israel and the strength of the Israeli military elite the level of defense expenditures approved is hypothesized to adapt to the requested level of military expenditures

The level of spending is adjusted upward in election years as it is typical for salaries of military personnel and defense related industries to be increased just before elections While the underlying dynamics may not undergo drastic change in election years during these years it is thought to be especially difficult for the Israeli incumbent policy makers to say no to demands for increased spending (Mintz 1985c) Inflation as captured by the consumer price index (X_3) is hypothesized to place some damping constraint on the growth of military expenditures in Israel For a treatment of inflation in Israel see Bruno and Fischer (1984) for a discussion of the politics of inflation in Israel see Radian (1983)

The second part of our model is represented in equations [3] through [5] in Table 1 It is interesting to note that this set of expenditures in the budget (i e the ones earmarked for defense imports) is influenced shaped and constrained by quite a different set of variables most importantly the amount of military aid Israel receives (see Berglas 1983) Approximately 41% of Israeli arms imports in the 1973-1978 time period were financed through military grants while the rest were made possible through loans and other forms of aid (Kochav 1983 McGuire 1982) Equation [3] represents the establishment of a target for Israeli military aid It should be stressed that this equation represents some consensus between the U S and Israel as to the need of the Israelis We posit that there is broad agreement upon 1) matching some portion of the changing military expenditures of the so-called confrontation states (X_2) (Egypt Jordan and Syria) 2) the independent effect of war involvement

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(X_1) on requested aid and 3) increased aid requirements during periods in which a military intensification (X_5) is underway

The Israeli military aid target as negotiated between the U S and Israel responds to changes in Arab (Syrian Egyptian and Jordanian) military expenditures Israeli involvement in wars and major intensification programs such as the shipment of M-60 tanks and F-4 F-15 and F-16 fighters Luttwak (1984 p 131) argues that these weapon system intensification programs have reflected the force structure goals of the Israeli Defense Forces as derived from evolving operation concepts of war as well as changing definitions of national security This stands in contrast to many third world nations that tend to define their defense needs in *ex post facto* response to their weapons suppliers As in other countries however the military aid target in Israel is virtually always greater than the amount actually being granted Equation [4] portrays the evolution of actual military aid as it adjusts to the agreed upon military aid target

Finally military imports (Equation [5]) are posited to adjust to the amount of military aid granted by the U S In earlier periods in which there was no military aid being granted by the U S military imports adjusted to the percent changes in Arab military intensification programs as reflected in their defense spending and to IDF intensification programs Accordingly different mechanisms are posited for pre-1967 and post-1967 military imports

Finally an identity is used to represent total Israeli defense expenditures which are equal to domestic expenditures plus defense imports This identity is represented as Equation [6] in the mathematical model presented in Table I

To estimate the model we used data taken from official Israeli government statistics (see Appendix I for data sources and Appendix II for operational

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definitions and the actual data) The data on domestic defense expenditures
defense imports and total military expenditures were obtained from the Israel
Central Bureau of Statistics (see Berglas 1983 for a detailed discussion of this
data set) while data on military aid to Israel were taken from the Bank of
Israel s Annual Report

Results

Our epistemology has been an orthodox one we developed a theory about
the forces driving military spending in Israel derived from it an operational
model specified from that dynamic model the variables of concern and collected
data on those variables Subsequently we have been involved in both *testing*
the model and in *estimating* empirical parameters for it

The testing of the model only in part resides in our implementation of an
operating computer simulation (written in the DAREP language for difference and
differential equation systems) The computer simulation which represents these
ideas produces results which are plausible at least to us Part of the
testing of our model also involves a more conventional notion of testing in the
social sciences namely empirical estimation Using the methodology described
in Ward (1984 appendix 2 therein) known as dynamic trajectory fitting we have
empirically estimated the parameters of the system to help us determine whether
the postdictions of the model permit us to accurately map the major components
of Israeli military expenditures as they have evolved during the last two and
one-half decades

The model is a system of three primary equations which implies that
empirical estimation should proceed by simultaneously estimating the parameters
of the entire system rather than proceeding equation-by-equation Table 2
presents the results of these statistical estimations The overall fit of the
system to the empirical data is strong in that the overall systemic variance in

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the three dependent variables domestic defense expenditures U S military aid to Israel and Israeli defense imports is well captured In fact over 95% of the total variance is explained in a statistical sense Individually each equation accounts for at least two-thirds of the variance in the empirical data All estimated parameters are *significant* in a statistical sense each of the parameters is at least one order of magnitude larger than the error associated with it Most although not all are in the predicted direction

Based on the empirical findings the process shaping the evolution of Israeli military expenditures can be characterized as follows Growth in Arab military expenditures stimulates the two major components of the Israeli military budget It increases expenses for domestic defense production and military manpower the so-called domestic defense budget It also creates the need to purchase military weapons systems from abroad Since most such systems can not at present be produced domestically Israeli decision makers are forced to turn abroad This creates the need for increased military aid from the U S that determines the total amount of defense imports These military imports feedback to expand of the domestic defense budget because of the need to support and maintain the newly acquired weapons systems and materiel The domestic defense budget is also influenced by the involvement in wars In periods of high inflation or elections it is adjusted upward

The findings also provide some insights into the behavior of the many bureaucracies involved in the defense sphere the Israeli government which authorizes the spending the U S government that provides the aid and the Israeli ministry of Defense that imports the arms For example actual military spending levels adjust to the requested levels the military aid target is adjusted to the perceived military needs and the amount of military imports rapidly adjusts to the amount of aid granted

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The next sections provide a brief discussion of the findings by examining each component in turn

Table 2.   Estimated Coefficients of Israeli Military Expenditures

Dependent Variable	Right Hand Side Coefficients		Estimated Value	Parabolic Error
Domestic	β_1	impact of defense imports	2 4146	± 10968
Defense	β_2	impact of war casualties	32 580	± 94094
Expenditures	β_3	impact of Arab expenditures	491800	±2349
$R^2 = 957$	β_4	adjustment speed	00071	± 00000266
	β_5	impact of inflation	- 0133	± 000287
	β_6	impact of elections	288 36	±4 76
Military	β_7	impact of Arab expenditures	454460	±1133 1
Aid	β_8	impact of IDF intensification	-31721	±172 9
$R^2 = 813^*$	β_9	impact of war casualties	-21 93	± 62934
	β_{10}	adjustment speed	00173	± 0000030 4
Defense	β_{11}	post-1967 adjustment speed	1 5788	± 04206
Imports	β_{12}	pre-1967 adjustment speed	000223	± 0000041 3
$R^2 = 692$	β_{13}	pre-1967 Arab expenditures	278 3500	±46959
	β_{14}	pre-1967 IDF intensification	-219740	±17371

System descriptor $R^2_{sys} = 98 3$

Note that actual data are given in Appendix II
*Excluding the pre-1967 period in which no aid was given the simple correl ition between actual and predicted military aid is 60

Domestic Defense Expenditures

Figure 1 illustrates the visual correspondence between actual Isi icli domestic defense expenditures and those produced by our empirical estimatis which are presented in Table 2 The fit in traditional terms is strong ind the corrected coefficient of determination is 957

The results for the domestic Israeli defense expenditures suggest that with defense imports at high levels domestic defense expenditures tend to be increased in Israel consonant with our hypothesis Moreover increases in Arab military expenditures are a strong positive force driving up Israeli domestic defense expenditures Periods of intense fighting with their

corresponding high levels of casualties also lend to increases in domestic spending

The adjustment of actual to requested levels (β_4) is significant vet small suggesting that other factors also influence the domestic expenditures beyond what is characterized as the requested budget Two of those influences are the level of consumer prices (an indicator of inflation) and whether there is an election High levels of inflation tend to accelerate not dampen the Israeli expenditures on the domestic budget--even in constant prices When there is an election period increased demands may be placed on the decision-making bodies and our results suggest that these demands are met election periods do tend to be associated with increased expenditures

Figure 1 Estimated and Actual Domestic Defense Expenditures
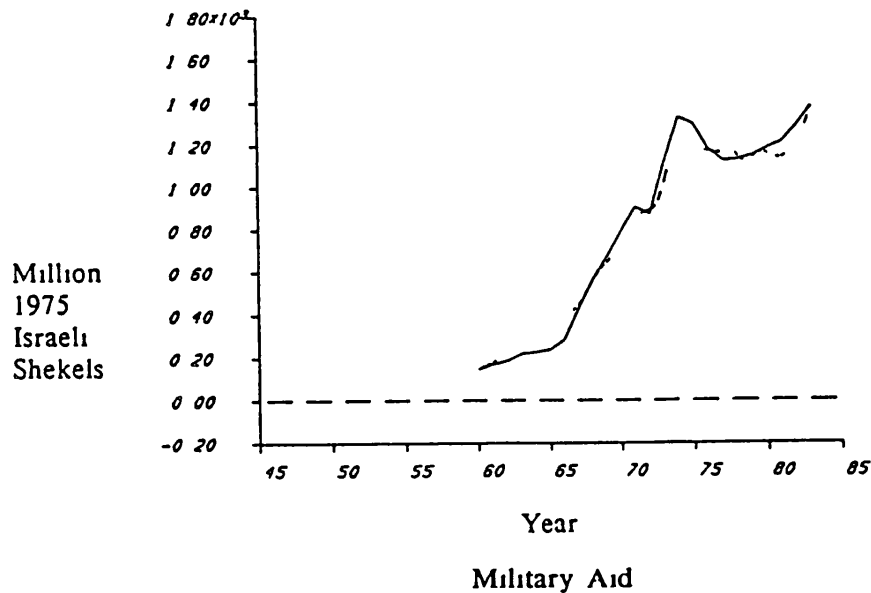
Military Aid

Military aid from the US to Israel is portrayed by equations [3] and [4] Figure 2 portrays the visual fit of the estimated military aid as compared with the actual aid both given in constant 1975 Israeli Shekels (converted from dollar figures) The visual fit is strong though falls far short of the

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convergence between estimated and actual found in the case of domestic defense expenditures The adjusted R^2 is 813 however indicating that about 80 percent of the variance in actual military aid to Israel from the U S is accounted for by equations [3] and [4] All estimated parameters are considerably larger than their associated parabolic error estimates indicating their statistical significance The graph shows exactly where the equations fall down in providing an adequate representation of the military aid process In particular the large discrepancy between actual and predicted aid during the Yom Kippur war of 1973 is evident in the graph Nor do they capture the real decline in U S aid to Israel between 1970 and 1973

The driving forces in this equation are the strong positive reaction to the growth in Arab military expenditures (β_7) and the adjustment of actual aid to the targeted aid (β_{10}) Beyond that the impacts of post-war intensification periods of the Israel Defense Forces (β_8) and of war involvement (β_9) were negative and opposite their hypothesized effects This presents a puzzle given what are widely accepted characterizations of the impact of intensification of defense programs and war upon requests for aid by Israel In seeking more information on this topic a t-test (t=3 27 p= 03) showed that the percentage change in aid is significantly higher during the years characterized by IDF intensification programs In contrast aid was not significantly higher during war periods It seems at least plausible that the increases in Arab military expenditures and Arab reciprocal war involvement with the Israelis were themselves significantly related to IDF intensification programs In such a case it might be that the impact of IDF programs and war involvement would be masked by the impact of increasing Arab military expenditures In fact the zero order correlation between war casualties and the percent change in Arab military expenditures is 70 Moreover while the

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number of war casualties incurred in 1973 were markedly higher than in 1982-83 the aid level in the latter period was not substantially lower Further since 1974 the conditions under which aid to Israel has been granted have improved from the Israeli perspective involving more grants than loans and permission to convert some aid to local currency These trends may help to explain our results

### Figure 2. Estimated and Actual Military Aid from U S

Year
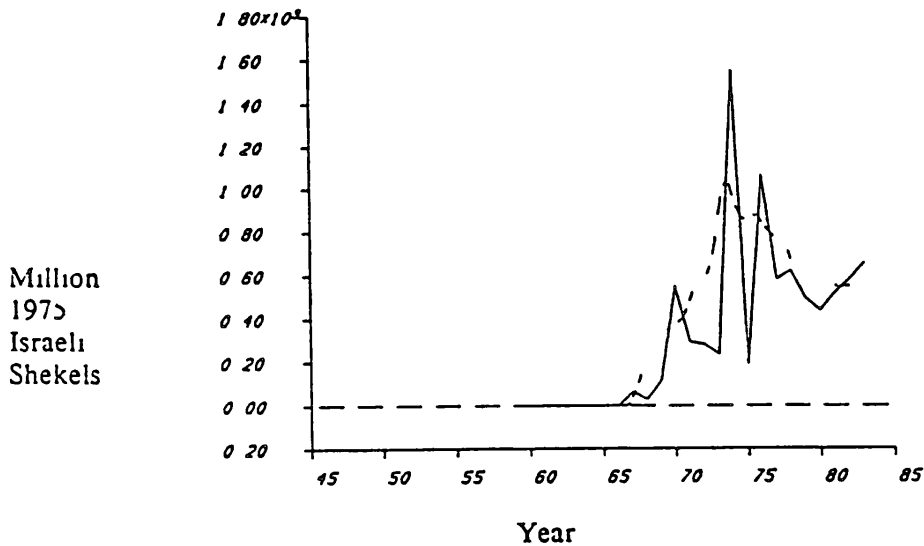
Defense Imports

As portrayed in Figure 3 the visual fit of actual and estimated defense imports (both given in constant 1975 Israeli Shekels) is strong The corrected R^2 is 692 and slightly over three-quarters of the variance in Israeli defense imports is captured by equation [5] This equation tracks well both during the pre-1967 period in which defense imports are strongly influenced by Arab military expenditures and during the post-1967 period in which defense imports are primarily a function of the amount of aid that Israel receives from the United States All parameters related to defense imports are far larger than their standard error yet the sign of the impact of IDF intensification programs

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in the pre-1967 period is opposite to our prediction perhaps because of the simultaneous growth in Arab expenditures The post-1967 adjustment coefficient suggests by its size (1 57) the almost immediate adjustment of defense imports to the military aid received from the United States

Figure 3 Estimated and Actual Defense Imports

Million
1975
Israeli
Shekels

Year
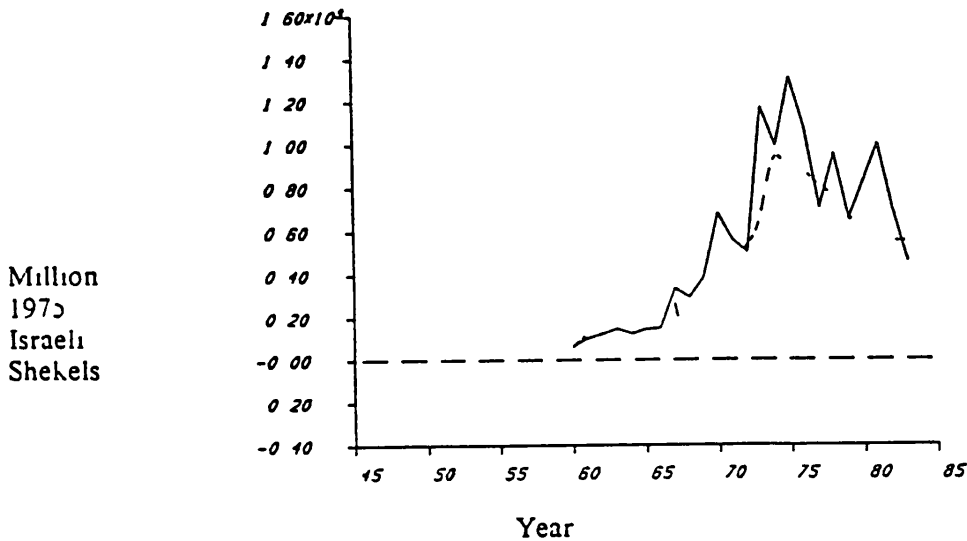
Total Defense Spending

As a further check on the empirical fit of the model we compared the fit of the actual and simulated identity shown in Figure 4 As expected with such a high amount of variance explained in the total system the visual fit of these two data series is quite high revealing no major composition errors introduced by treating total defense spending as the sum of two components This provides some added confidence in the model insofar as we did not model the totals directly

Figure 4 Simulated and Actual Total Defense Spending

Million
1975
Israeli
Shekels
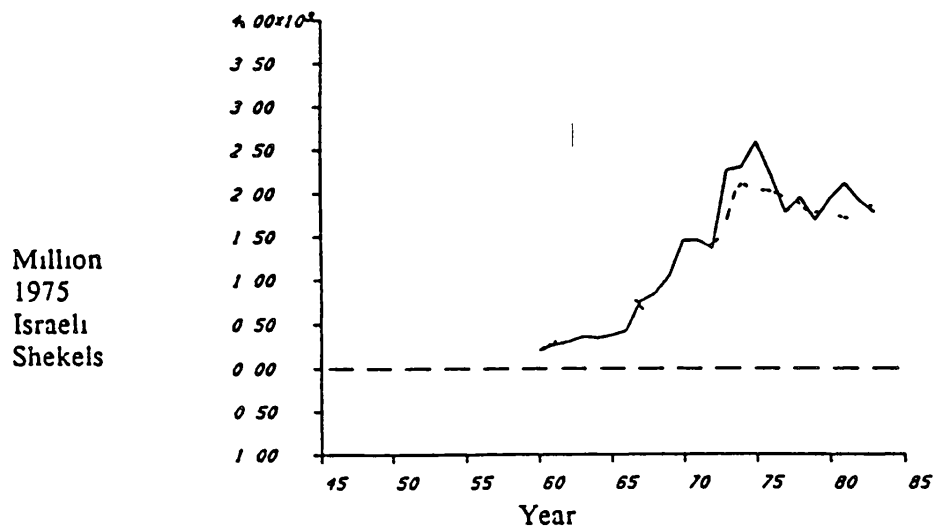
Conclusions

Despite the large number of putatively unique characteristics of the Israeli military budget the forces shaping the evolution of military spending in Israel are those which characterize military growth in many other nation-states in many other historical epochs For example Israeli military expenditures are reacting strongly to changes in the military expenditures of their rivals (i e the Arab states) This is consonant with the action-reaction hypothesis many have used to explain arms races (see Richardson 1960) The domestic military budget is also influenced by Israeli involvement in wars similar to the way in which wars almost always drive up expenditures As in other nation-states military expenditures are influenced by the ability or inability of the state to finance military programs from internal or external sources The problem of who pays for defense pervades not only Israeli military decision making but also is important in virtually every militarized or partially militarized society Furthermore while each of the organizations involved in the process is concerned with a different aspect of the decision

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process there appears to be a convergence of interests leading to the same policy preference namely the need to constantly increase military spending

Huntington (1957 p 2) explained that military policy making is often derived from a "functional imperative stemming from the threats to the society s security and a social imperative arising from social forces ideologies and institutions dominant within the society The so-called functional imperative is reflected in the Israeli response to military intensifications of the Arab countries and to the acute and prolonged conflict in which Israel continues to be engaged The social imperative is reflected in the willingness of Israeli decision-makers to increase military spending despite deteriorating economic problems such as hyperinflation their efforts in creating institutional arrangements with the U S government that make it possible to increase military imports *vis-a-vis* the perceived threat and the fluctuations in spending that result from the pressures generated by the election process

Israeli military spending behavior can be viewed mainly in terms of the magnitude of the increases in the budget and in terms of the relative uniqueness of the way in which Israel has solved its military expenditure problems In terms of the magnitude for example Israeli military expenditures following the Sinai campaign grew in one year by more than 100% in constant prices In terms of the the solution Israel has obtained massive external financing for purchasing modern sophisticated defense items Given the centrality of security in the Israeli decision-making calculus and the perceived military threat Israeli decision-makers react strongly to Arab intensification programs and war involvement The U S responds to Israeli requests with aid and the Israelis utilize this aid to import weapon systems These interactions help reinforce the vicious cycle of actions and reactions

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Appendix I Data Sources

Domestic defense expenditures arms imports & total defense expenditures
1960-1974   Central Bureau ot Statistics *Monthly Bulletin of Statistics* (1982) Hebrew
1975-1984   Central Bureau ot Statistics *Monthly Bulletin of Statistics* (1985) Hebrew

Military aid
1960-1974   Bank of Israel *Annual Report* no 48-49 p 20 Hebrew
1975-1984   Hassid and Lasser (1983) p 37 Hebrew

Arms expenditures of Egypt Syria Jordan
1959-1984   Stockholm International Peace Research Institute *World Military Expenditures and Arms Transfers* (annually)

War casualties
1967 1969-1970 1973 Zussman (1983) p 18 Hebrew
1982-1984   Israel Information Center *Israel Government Yearbook* annually Hebrew

Israeli Defense Forces intensification programs
1960-1981   *IDF in Its Might* 1982 (Hebrew)
1982-1984   Author s estimates

Gross domestic product deflator
1960-1980   International Monetary Fund *International Financial Statistics Supplement on Price Statistics* No 2 (1981)
1981-1984   International Monetary Fund *International Financial Statistics* Monthly

Consumer price index
1960-1980   International Monetary Fund *International Financial Statistics Supplement on Price Statistics* No 2 (1981)
1981-1984   International Monetary Fund *International Financial Statistics* March 1985

Exchange rate
1960-1984   International Monetary Fund *International Financial Statistics Supplement on Exchange Rates* No 9 (1985)

Election years
1960-1984   Central Bureau of Statistics *Statistical Abstract of Israel* (annually) Hebrew

Appendix II   Data 1960-1983

YEAR	Y2	Y4	Y5	X1	X2	X3	X4	X5	S1
1960	146 3	0 00	64 5	0	0 10	19 6	0	0	0
1961	168 1	0 00	103 4	0	0 09	20 9	1	0	0
1962	185 4	0 00	123 8	0	0 11	23 0	0	1	0
1963	218 6	0 00	146 8	0	0 08	24 4	0	0	0
1964	226 3	0 00	123 6	0	0 19	25 8	0	0	0
1965	238 6	0 00	144 9	0	0 08	27 7	1	1	0
1966	284 6	0 00	150 6	0	0 01	30 0	0	0	0
1967	427 8	63 30	335 3	810	0 23	30 5	0	0	1
1968	563 9	27 60	291 4	0	0 30	31 1	0	1	1
1969	668 2	114 86	387 3	685	0 18	31 9	1	1	1
1970	787 8	548 13	681 2	685	0 15	33 9	0	1	1
1971	900 5	290 08	559 3	0	0 29	38 0	0	0	1
1972	867 2	279 38	501 7	0	0 00	42 8	0	0	1
1973	1115 3	232 04	1168 0	2680	0 74	51 4	1	0	1
1974	1323 5	1546 14	989 9	0	-0 27	71 7	0	1	1
1975	1293 5	189 00	1310 0	0	0 09	100 0	0	0	1
1976	1174 0	1058 31	1074 0	0	-0 06	131 4	0	1	1
1977	1121 0	579 79	703 0	0	0 01	176 9	1	0	1
1978	1127 0	620 57	953 0	0	-0 28	266 4	0	0	1
1979	1147 0	492 44	655 0	0	0 23	474 9	0	0	1
1980	1181 0	436 12	824 0	0	-0 20	1097 1	0	0	1
1981	1209 3	516 86	997 0	0	-0 01	2378 5	1	0	1
1982	1281 9	578 45	691 9	458	0 01	5241 9	0	0	1
1983	1370 4	653 30	457 4	89	0 07	12874 5	0	0	1

Y_2 = domestic defense expenditures 1975 Israeli Shekels

Y_4 = U S military aid to Israel 1975 Israeli Shekels converted from U S dollars using exchange rates and GDP deflator

Y_5 = Israeli defense imports 1975 Israeli Shekels excluding the 1979 airfield intensification programs in the Israeli Negev

X_1 = number of casualties during wars specifically Israeli casualties in wars and not in other military activities such as preemptive and retaliatory attacks against Arab terror

X_2 = annual percent change in Egyptian Syrian Jordanian military expenditures original data in 1972 U S dollars

X_3 = Consumer price index 1975 = 100

X_4 = Election year = 1

X_5 = IDF intensification program = 1 excluding the Negev airfield intensification

S_1 = Years in which there was some Military Aid from U S = 1

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