

**ISRAEL'S DEFENCE INDUSTRY
AND
THE ROLE OF ARMS EXPORTS**

*Dissertation submitted to Jawaharlal Nehru University
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MASTER OF PHILOSOPHY

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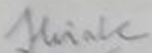
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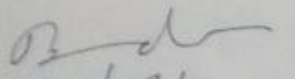
DECLARATION

I declare that the dissertation entitled *Israel's Defence Industry and the Role of Arms Exports* submitted by me for the award of the degree of **Master of Philosophy** of Jawaharlal Nehru University is my own work. The dissertation has not been submitted for any other degree of this University or any other university.


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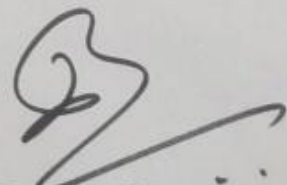
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ACRONYMS AND ABBREVIATIONS

ATBM	Anti-tactical ballistic missile
ATE	Automatic Test Equipment
ATGM	Anti-tank guided missile
CDC	Control Data Corporation
DTE	Data Test Equipment
FMF	Foreign Military Financing
FMS	Foreign Military Sales
GDP	Gross Domestic Product
GNP	Gross National Product
IAF	Israeli Air Force
IAI	Israel Aircraft Industries
IDF	Israel Defence Force
IMI	Israel Military Industries
JPMG	Joint Political Military Group
OSP	Off-shore Procurement
RAFAEL	Israel Weapons Development Authority
MASHA	Maintenance Centres within the IDF Logistics Branch
MICR	Missile Technology Control Regime
MiG	Mikoyan and Gurevich fighter aircraft

MOA	Memoranda of Agreement
MOU	Memoranda of Understanding
NATO	North Atlantic Treaty Organisation
PLO	Palestine Liberation Organisation
R&D	Research and Development
RPV	Remotely Piloted Vehicle
SA2	Surface-to-air guided missile
SAM	Surface-to-air missile
SDI	Strategic Defense Initiative
SPS	Self-Protection System
SSM	Surface-to-surface missile
TAAS	Ta'asiya Zvai'it
UAV	Unmanned Aerial Vehicle
UN	United Nations
US	United States
WMD	Weapons of Mass Destruction

Chapter One

Introduction

Defence is the primary objective of state's national security. Besides, well trained human resources and strategic planning, weapons are crucial for national security. The importance of weapons has been recognized since ancient times and has been elucidated by Thucydides in his classic *The Peloponnesian War*, wherein he mentions the importance of arms, trade in arms, supplies, ships and men in Ancient Greece (Stohl and Grillot 2009: 10-40). By fifteenth and sixteenth century, Italy and England emerged as the most dominant arms suppliers due to their extensive trade networks; weapons production and transfers and growth of capitalism expanded arms manufacturing to the Netherlands, Sweden, Germany, France, Russia and Spain. By the sixteenth century, there were a large number of peripheral and third tier producers such as Portugal, Scotland and Hungary and also Ottoman Turkey, India, China and Japan that either produced limited quantity of armaments or replicated the European models (*ibid*).

Technological innovations in arms technology such as the invention of firearms, gunpowder and cannon and products of industrial revolution such as steam power and new innovations in metallurgy increased the qualitative scope of armaments. With the help of Laissez-faire economy, international arms trade expanded and private weapons manufacturers sold weapons to interested parties.

After First World War, the control of arms industry shifted from private sector and states started to take control of the arms manufacturing and trade process. Governments became actively involved in providing research and development funds, encouraging arms exports, providing assistance and advice to other governments and even offering loans for arms purchases. Governments also enforced laws and procedures to regulate and license arms trade which enabled them to monitor and control the arms flow. As a result, governments along with arms manufacturers channelled the flow of arms and arms trade became an important tool of diplomacy (Stohl and Grillot 2009: 10-40: Harkavy 1994: 11-28).

In 1950, the total global value of arms sales was around US\$7 billion per annum which increased to US\$20 billion in 1953 and by 1982 it rose to US\$45 billion. During the Cold War, the US and Soviet Union were the dominant arms suppliers followed by the Great Britain, France and Germany (Stohl and Grillot 2009: 10-17). In this period, developing states also contributed to share of arms sales originating from secondary suppliers and countries such as Israel, South Africa, Brazil, Argentina, Taiwan, North Korea, South Korea and Egypt (*ibid*).

The post-Cold War period is noted by shrinking arms market and is largely dominated by the U.S, followed by Russia, Germany, China, France, Britain, Spain, Ukraine, Italy and Israel during 2009 to 2013 period (SIPRI 2014). The US due to its comparative political and commercial advantages has emerged as the leading player in arms trade overtaking its closest rivals (Klieman 1998: 111-112). Another related trait of post-Cold War arms trade is the shrinking arms market in comparison to Cold War period. For example between 1984 and 1988, the amount of annual military sales was US\$42 billion per annum which dropped to US\$27 billion per annum between 1989 and 1993 (Stohl and Grillot 2009: 23-31). Once again there is an upward swing in international arms trade. The spate of international terrorism and emergence of non-state actors have rejuvenated the international arms trade, especially in areas such as small arms, surveillance and unmanned aerial vehicles.

In this context, Israel being a middle-level arms manufacturing and arms exporting state has occupied a niche position. Despite concerns such as lack of strategic and industrial resources pertinent for arms production and small domestic market, Israel has managed to gain international reputation for excellence in weapons technology. The defence industry was created and nurtured to fulfil modest goals to provide security in an increasingly hostile environment. The contemporary manifestation of Israel's defence industry is the result of unique circumstances and policy choices that occurred over the years which has turned its defence industry into a billion dollar industry and four of its companies feature in the top 100 arms companies in the world (Lifshitz 2010: 266-278).

Since its formation in 1948, Israel has engaged in numerous conflicts with its neighbours. The situation of extreme hostility coupled with a lack of strategic depth and other geographic constraints, limited economic and human resources, have been instrumental in the formation of Israel's security policy. In effect, besides the need for well trained and highly skilled defence force, Israel has been keen to develop highly sophisticated and technologically advanced defence industry to cater and compliment its security strategy. Due to limited economic resources and restricted access and availability of arms in international arms market, it was essential for Israel to incorporate military-industrial development in its overall national economic and security planning.

The strategic planning has been a part of Israel's security psyche that can be traced to the presence and availability of arms industry in the pre-state era. Since early 1900s, Jewish militia groups relied on locally manufactured small arms and explosives which were built in underground basement factories and used them from against attacks by Arab groups. Following the 1920 riots Haganah was formed that set up semi-permanent cottage-type industries that manufactured hand grenades, home-made bombs and other explosives. Ta'asiya Zvai't (TAAS) was established in 1933 that engaged in research and development of weapons. During and after the Second World war these factories started manufacturing Sten submachine guns, grenades, rifles, Dror light machine guns, British and Davidka model mortars, ammunition and 2-inch and 3-inch mortars and anti-tank weapons which were effective in the Arab-Israeli war of 1948. Besides the indigenous weapons, arms supply from East European states especially Czechoslovakia played a key role in the 1948 war (Hoyt 2007: 75-76).

After 1948, the political leaders and the military were aware of the importance of weapons producing facilities and laid the foundation for the arms industry. The creation of the state widened the vestige of conflict between Israel and the neighbouring Arab states without permanent peace. The leadership was keen to ensure arms and military equipments which were hindered by political barriers such as the 1950 Tripartite Agreement among the United States of America, Britain and France aimed at controlling the flow of arms into the region. The Tripartite Agreement led to the formation of Near East Arms Coordinating Committee (NEACC) in 1952 to coordinate arms control in the region and allowed arms access for internal security and self-defence (Slonim 1987: 135-149). Under such circumstance, Israel realised that the security goals of the state could not be met by imports alone.

Prime Minister David Ben-Gurion, who was also the Defence Minister, played an important role in expanding the infrastructural facilities of the nascent defence industry and the creation of new defence industries. He established a two-track diplomatic and industrial policy with the aim to secure the supply and maintenance of arms. This track policy encouraged the strategy to ally with external powers and sought access or membership in the Western defence community while also seeking and propelling efforts for the development of domestic defence industry. The two-track policy was pursued to nurture the domestic industry and reduce dependence on external powers (Hoyt 2007: 75-76).

The Science Corps was created to conduct research and development operations under the jurisdiction of Ministry of Defence in 1953. TAAS later became Israeli Military Industries and production increased by over 50 percent with research and development of rockets, guided weapons and missiles. Israel Aircraft Industries (IAI) was formed for overhaul, purchase and maintenance of both civilian and military aircrafts and to maintain El Al, Israel's national airline. Israeli Electronics Industry (Tadiran) was formed to provide necessary communication and electronic equipments and batteries (Hoyt 2007: 68-114; US Congress Global Arms Trade 1991: 95-100).

The domestic arms industry developed on an ad-hoc basis depending of the arms requirements and needs and relied on grants from the US, aid received from the Jewish Diaspora and also financial reparations under the Reparations and Restitutions Agreement with the Federal Republic of Germany that was signed in 1953 (*ibid*). Until 1955, local firms focussed on the production of small weapons and refurbishing outdated weaponry. By mid-1950s Israel developed supply relations with France that lasted until 1967. During this phase, Israel's defence industries started with licensed production of weapons mostly from France and imported advanced aircrafts, armoured vehicles, naval craft etc. Due to dependence on France, domestic defence production was limited and its relative weight in the overall economy was quite low (Steinberg 1983: 279-283).

After 1967 Arab-Israel war, the Israeli-French relations deteriorated and arms cooperation between the two states came to a halt (Steinberg 1986: 164). France and later the Britain refused to supply aircrafts and tanks. The resulting embargo triggered a change in strategic vision of domestic defence industry and broadening of Israel's industrial goals and called for strategic self-sufficiency. This did not mean absolute independence. The military leadership advocated

weapons imports as huge investment in domestic industry would put pressure on the force build-up and war preparedness of army while the civilian officials argued that an advanced technology-intensive defence industry would be compatible with the state's economic goals and comparative advantages (Klieman and Pedatzur 1991: 73-75; Peled 2001: 4-7; Hoyt 2007: 95-97).

Eventually, substantial resources were invested in defence sector and the labour force in arms industry substantially increased by over 300 percent between 1966 and 1972. From 1966-67 to 1973, the share of employees in defence industry rose from 10 percent to 19 percent and military-based industrial growth soared four times that in other industrial growth during the period 1966-73. During this period, government for the first time welcomed private firms to engage in defence sector and bid for defence contracts and firms such as Elbit and El-Op emerged during this period (Hoyt 2007: 83-88).

After the October 1973 war, there was severe restructuring in Israel's security framework and the annual defence expenditures were increased by 12 times. Israel's attempt to develop new generations of weapon systems was given attention. Besides security perception and insecurity caused by French embargo, issues such as lack of ammunition and spare parts, organizational and development changes needed for American weapons, demand for renovation and improvisation of weapons systems to meet specific Israeli security needs and involvement in regional arms race, need for international cooperation with regard to defence knowhow and manufacture and a growing market for Israel's arms products prompted the need for domestic industry. This period was characterised by unprecedented growth in defence industry for approximately 20 years and can be divided into two sub periods. Until 1976, the defence industry was driven by domestic demand which shifted to rapidly growing exports (Hoyt 2007: 91-97).

The political leadership realised several limitations in terms of defence parity with neighbouring Arabs, the French embargo and the sudden threat during 1973 War which resulted in framing its aggressive drive for defence production primarily for domestic consumption. These goals changed in mid-1970s where the international market for Israeli arms opened new prospects and arms exports were encouraged. During 1950s, arms exports concentrated in small arms and outdated weapons systems which saw exponential growth after 1973. Between 1967 and 1984, the annual increase in arms exports per year was 20-24 percent (Steinberg 1986: 163-166; Hoyt

2007: 91-94). Arms exports helped the state to gain foreign exchange and strengthen the economy and also maintain full production levels.

But by 1984, Israel's economy became overtly dependent on arms exports which increased further in the coming years. The percentage of arms exports in total industrial exports increased from 7 percent in 1967 to 15 percent in 1974 and 24 percent in 1977. Likewise, its local defence production value in 1974 was US\$500 million, US\$1.4 billion in 1980, US\$2.25 billion in 1984, US\$2.4 billion in 1988 and US\$ 3.2 billion in 1990. In fact in 1984 the share of arms exports in total arms production was 30 percent which increased to 78 percent in 1990 (Hoyt 2007: 91-94). In terms of domestic arms consumption the proportion perpetually lowered.

Excessive dependence on exports led to slow down in other economic sectors. By 1985 the defence production policy was revised as the economic costs of defence industry raised number of questions in terms of whether a small industry can sustain the dual goal of self-sufficiency oriented defence production and defence production for exports. The results obtained from this policy have only led to partial independence with big macroeconomic risks. The overall economic situation deteriorated in 1980s and the end of Cold War changed the dynamics of international defence market. Due to the overemphasis on export market, the export composition was not necessarily compatible with the specific development and production infrastructure of local sales which in turn caused labour and production surpluses leading to structural imbalance in defence industries (Mintz 1984: 112-113). Israel was haunted by unique two fold dilemmas on whether it should reassert its national commitment to arms strategy and balance its exports needs and what particular competitive survival strategy should it adopt to exist and thrive in the shrinking arms market.

This resulted in severe restructuring and retrenchment and a number of indigenous R & D and production programmes were cancelled or received reduced funds. The new approach shifted the focus from self-sufficiency to supplying IDF with force multipliers by means of original and unique technological solutions (Klieman 1998: 111-132). It reduced the demand for local production in monetary terms. The structural change was also aided by the growing cooperative relations with the US since the Camp David Agreements with Egypt. Although Israel-US defence relations were formalised in 1967, Israel was still gripped with scepticism over dependence on imports. After 1979, insecurity with regard to arms imports declined with growing reliance on US arms imports and financial aid. The 1967 French embargo scenario was seen unlikely and the goal of strategic self-sufficiency was shifted to focus of unique cutting

edge technological innovations and dependence on US imports (Gazit 1987: 83-124; Kannegatti 2007: 65-73).

In such a case, following the restructuring process, the export scenario also saw a change. Earlier, while Israel exported small arms and limited weapons systems to developing countries, it ventured into supplying more sophisticated systems and equipments and stressed on upgrading equipments through collaborative frameworks. Israel defence industry also gained new markets due to its faster development and delivery process and providing technological knowledge and other means of cooperation to developing states willing to build their own defence base. Due to its middle position in international market Israel was capable of providing equipments suitable for developing states and fulfils the technological needs of industrialised states. In the post-Cold War era, Israel has attempted to fully utilise its growing bilateral relations with different countries with sometimes diverse political systems and beliefs to venture in arms trade and gaining newer markets. Due the continuing conflict with the Arab states and occupation of Palestinian territories, Israel faced severe diplomatic and political isolation which prompted it to develop clandestine arms relations with a number of African states (Beit-Hallami 1986: 13-14).

The establishment of diplomatic relations following the Madrid Conference of 1991 opened new avenues for arms exports. At times, Israel faced the risk of diplomatic and commercial setbacks, entanglement in local disputes between client states due to indiscriminate arms trade relations with autocratic regimes in Africa especially South Africa, Asia and Americas. Countries that imported Israeli weapons such as Chad, Uganda, Cameroon, Chad, Equatorial Guinea, Lesotho, Nigeria, Rwanda, Seychelles etc. continue to be important. This strategy was prompted by Israel's willingness to establish itself in the arms market and to overcome its political and diplomatic isolation through arms exports. Defence exports were seen as a viable instrument to garner international influence, political support and bilateral relations (*ibid*). In the changing international context wherein the political, the largely geopolitical and economic aspects are changing and have become more pronounced, growing depoliticisation has largely acted in Israel's favour in furthering its arms exports policy.

Besides the developing and underdeveloped states, Israel's defence industry has been capable of reorienting its markets to industrialising states in North America, Western Europe, Southeast Asia, China, India (Klieman 1998: 121-130) etc. Israel has signed contract with Switzerland in

1995 to develop RPVs and other electronic equipment. Israel has entered into collaboration with several East European states for upgrading and modernising Soviet designed tanks and fighter planes. In the region, Israel was even helpful in the development of arms industry in Turkey. In Asia, India has become the biggest market for Israeli arms and is growing in states such as South Korea, Thailand, Singapore, etc. (*ibid*).

There are structural issues which affect Israel's performance in export market. Its political isolation and exclusion from the lucrative arms market in the West Asian region, dominance of larger and politically influential suppliers with larger infrastructure such as the U.S., Britain, France, Germany, Russia in the international market and easier access of regional supplier to local markets (such as South Africa to its neighbours; South Korea, Singapore and Australia in the Far East etc) affects Israel's arms exports (Klieman 1998: 111-132). Israel is a signatory of UN Register of Conventional Arms that was established in 1991 to maintain transparency on arms transfers through providing information on international arms trade. While Israel has been a regular in submitting details, the nature of Israel's defence relations has been traditionally clandestine (Steinberg 1998 a: 107-108). Despite these challenges, Israel has succeeded in obtaining a niche position in international arms market. In the post-Cold War period, the share of arms exports continues to contribute a substantial and increasing share in Israeli economy. In 2007, Israel's total arms exports were US\$4.4 billion and have soared to US\$7.3 billion in 2010 (Lifshitz 2010: 266-278).

The rationale behind the development of arms industry in terms of history, politics, geopolitics, economy and mostly importantly security is delved into in order to decipher the growth process. In this context, the research endeavours to encapsulate the evolution and growth of Israel's defence industry since 1948 and analyse the policy changes, outcomes and challenges. The study focuses on the nature and growth process of indigenous arms industry and its manifestations on Israel's national security and raise questions on its effects in Israeli politics and economy. External factors have also affected Israel's defence industry and its goals positively and negatively. The complicated tussle for external arms procurement as well as opportunities over the years has contributed in shaping the direction and growth of the arms industry. In this light, the role of external factors in the development of its defence industry would also be analysed in detail. The economic as well as political manifestations of the arms exports policy have important bearing in development of defence-industrial infrastructure in

Israel. The economic and political opportunities and challenges of arms exports are accessed in order to nurture a wholesome understanding of the defence industry.

Literature Review

The scheme of literature can be divided into 3 broad themes. General trends in global arms trade; Israel's security environment; Israel's Defence Industry and the role of Arms trade in Israeli defence industry.

Global Arms Industry

J. Paul Dunne and Elisabeth Skons talk about the nature of military industrial complex (MIC) during and after Cold War. Since 1990s, the nature of MIC changed due to reduction in arms demand, drop in military spending and trade and increased flexibility in which arms could be procured. The advent of new technologies, such as Revolution in Military Affairs (RMA), communication and control technologies, shift in strategic concerns such as asymmetric warfare and the US monopoly over arms trade with restricted diversification have led to change in nature and extent of global arms industry. The level of military assistance has lowered and the flow of global arms trade would be determined by evolving power structure in the future (Dunne and Skons 2010: 281-292; Neuman 1995: 47-74; Klare 1996: 857-874). Mehmet Uye and J. Paul Dunne have suggested that despite initial signs of reduced defence spending the trends suggest that states have reconvened at purchasing arms and at a higher rate which raises critical questions especially in developing countries. They have emphasized that there is no evidence for a positive effect of defence spending on overall economic growth. They argue that in case of higher economic growth in states, the part of resource that is generated can be used for defence spending (Dunne and Uye 2010: 293-305; Keller and Nolan 1997-1998: 113-125).

The change in pattern of international arms trade is noted by many. Unlike the Cold War in which the superpowers controlled the direction and flow of arms, and the post-Cold War arms trade has gained a distinct depoliticisation and denationalisation. The arms purchases are rooted in the self-interests of trading parties in terms of regional rivalries, arms race, economic considerations or national prestige etc. (Klare 1996: 857-874; Harkavy 1994: 1-14; Grimmett 1993: 1-6). Denationalisation of the trade has also opened doors for transnational defence technology sharing in terms of technology transfers, international subcontracting, licensed production, multinational co-development and co-production of major weapons systems is

growing. This growing interdependence among states and defence firms has led to a reduction of costs, better access to innovative technologies and foreign markets and achieving economics of scale in manufacturing weapons. In effect, wholly indigenous defence production is on decline (Harkavy 1994: 1-14; Dunne and Skons 2010: 281-292; Bitzinger 1994: 170-198).

Some scholars highlight the immediate after effects of Cold War on arms trade and point that defence spending in developing states declined and arms industries were competing for a market in these states turning it into suppliers market. Following the Cold War, arms transfers declined globally until 2002, but since then it has witnessed a steady increase. During its declining years the level of proliferation was huge due to lack of strict arms controls rules enabling the supply of arms to conflict zones (Grimmett 1993: 1-6; Brom 2007, Holtom et al 2009: 1-24).

In context of international trade on conventional weapons, the proliferation is immense. Primarily, states are motivated by the foreign policy objectives and their insistence on the legitimacy of conventional weapons acts as hindrance to arms control. Rachel Stohl and Suzette Grillo underline the economic potential of global arms trade which in 2007 was approximately US\$60 billion. Arms trade has an important share in the economic growth in arms exporting states which leads to poor regulations for arms control (Stohl and Grillo 2009: 10-40; Keller and Nolan 1997-1998: 113-125).

There is a need to address the issue and concept of proliferation that can elevate state interests above finance capital and profit making, lobbyists and arms traders. Michael Moodie talks about the need to balance between competing and complex political, economic and security interests in making arms transfer decisions. While arms control measures have become tougher to control due to an accessible free market, options such as effective supplier-recipient dialogue, regional arms control and transparency and confidence building measures can be utilised for constraining arms transfers. The issue of transparency especially in terms of availability, extent and accuracy of information has been highlighted by Eamon Surry who argues that military production is an anomaly in economic production which gives states the right to legitimate force. In that case, there is a need for extensive information regarding of both production and transfers (Keller and Nolan 1997-1998: 113-125; Moodie 1994: 131-145; Klare 1996: 857-874; Surry 2006: 1-38).

Israel's Security Environment

Moshe Dayan argues that 'frontier security' has little meaning in Israel's geography as the entire state is a frontier. Scholars such as David Rodman, Dov Dvir and Asher Tishler also highlight that lack of strategic depth and geographical vulnerability as vital reasons for the growth of self-sustaining defence policy and the need for regular and unhindered flow of armaments. It acts as deterrence to the quantitative advantages enjoyed by Israel's Arab adversaries. Concerns in terms of the small size, small manpower and constrained economic limitations are important factors in defining Israel's security environment (Rodman 2001: 71-86; Dvir and Tishler NA: 194-215; Inbar 1996: 41-64; Dayan 1955: 250-267).

Gil Merom offers a more critical assessment of Israel's exceptional security environment and attempts to rationalise its strategic threats. While agreeing that the threat perception imposed by Egypt, Jordan, Syria and Iraq has declined over the years, Merom argues that Israel's national security exceptionalism such as existential strategic threat, international isolation, acquired social deficiency and moral superiority are exaggerated by giving them the pretext to devise strategically offensive solutions and also served as the utilitarian tool to extract optimal resources and mobilise the society for collective goals (Merom 1999: 409-434). Efraim Inbar contradicts this position and blames the presence of unstable autocratic regimes that are witnessing an Islamist surge such as in Egypt and Syria being a credible threat to Israel's security (Inbar 2012: 59-73).

Some note the effect of Arab Spring on Israel's national security and argues that unstable Arab regimes, in order to divert domestic crisis, may approach an aggressive stance towards Israel. The rise of Iran and Turkey are seen with caution coupled with the reducing role of the U.S. in the region which can have detrimental effect on Israel's security (Inbar 2012: 59-73; Zanotti, Katzman et al 2012: 1-5; Bergus 1988: 202-208) Donald C. Bergus observes Israel's quest for security through relations with external players such as the US and European states. Due to common political and strategic interests, the US has been highly important in Israel's strategic equation while relations with European states have diminished over the years. The continuing settlement in the West Bank has been a major security concern and harms Israel's strategic as well as political standing at the regional and global levels (Bergus 1988: 202-208; Brom 2007: 1-19).

Israel's Defence Industry

The origin and the development of Israel's indigenous defence industry before the formation of state and its successive growth process is highlighted by a number of scholars (Hoyt 2007: 69-114; Mintz 1984: 103-115; Komash N.A.: 1-9; Steinberg 1998: 91-130). Sharon Sadeh underlines that the psychological and material institutionalisation of the centrality of security due to hostile environment and the traumatic past in Europe coupled with broken agreements and embargoes were instrumental in the growth of defence industry (Sadeh 2001: 64-77). Yaacov Lifshitz highlights the limited success of dual policy in gaining arms security as the primary cause for domestic industrial growth (Lifshitz 2012: 266-278).

In terms of defence spending and its relationship with economic growth, short term increases in defence spending which grew largely after 1967, the economic growth rate has declined. Although after 1980s structural reforms in defence priorities and spending, economic growth has rebounded but has not reached to pre-1967 levels. Alex Mintz and Michael D. Ward emphasize on defence budget which has soared during this period due to Israel's continuous conflict with the Arab states. They further identify three levels of decision making with regard to defence budget, i.e. national in terms of political-economic expenditures; regional in terms of the Arab-Israel conflict and international in terms of superpower competition in arms transfers and military aid (Mintz and Ward 1988: 489-507; DeRouen 2000: 71-83).

Timothy D. Hoyt talks about the need for a self-sustaining industry that caters to the IDF's requirements and presses for the need of production of small arms, ammunitions, spare parts and platforms along with modification and modernization capabilities that can extend the service life and maintain capability for extended or protracted conflict. Dan Peled reiterates that with regard to defence research and development, the evaluation of social value of defence R & D should be compatible with Israel's national security considerations, the highly-skilled workforce and maintain independent military hardware without political and technical dependence on other states (Hoyt 2007: 67-114; Peled 2001: 1-27). Scholars such as Aharon Klieman and Yaacov Lifshitz argue for increasing imports from the US and European states for conventional weapons and focus its R & D on niche specialisation of innovative and technological advanced weapons due to small size of the economy. Dov Dvir and Asher Tishler talks about development of state-of-the-art technology for its weapons systems and stress of transnational defence cooperation in order to reduce R & D costs on platforms and large

integrated systems for public and private firms. They also insist on privatisation of firms in which mergers and joint ventures with national and international firms should be encouraged. They maintain that arms exports play an important role in Israel's economic growth (Klieman 1998: 122-133; Lifshitz 2010: 266-278; Dvir and Tishler NA: 194-215).

In terms of internal problem within defence industry, intense competition among defence firms, irresponsible privatisation policy, lack of sufficient demand to assure economic viability in production facilities, relationship between defence-oriented activities and the growing civilian hi-tech sector and role of labour unions in government defence firms have had negative effect in the diversification within the industry (Dvir and Tishler NA: 194-215; Lifshitz 2012).

The Role of Arms Trade

Sharon Komash draws attention on the relationship between arms industry and politics and how it affects Israel's foreign policy. He comments on the role of exports in the defence industry which is required to maintain efficiency and recoup production costs. Arms Exports has a substantial share in Israel's overall economy and is largely unaffected by domestic and regional political and security environment. Aharon Klieman argues that both global and domestic factors are crucial in directing Israel's arms flow. Global factors in terms of US role, UN transparency measures and other structural causes along with domestic factors such as economic situation has important bearing on the arms exports policy (Komash N.A.: 1-9; Klieman 1998: 122-133).

Cheryl Rubenberg, Zach Levey and others have posited that Israel's interest in arms exports in 1980s in South and Central America and Africa were linked to its desire to come out of its political and diplomatic isolation, common strategic interests with the US, the Arab-Israeli competition outside the region, etc. Aharon Klieman and Zach Levey agree that arms exports have helped the Israeli defence industry to maintain production at full capacity, facilitated strategic planning and stockpiling, assurance of supplies when needed and permitting scarce resources to be spent on science, technology, research and development and the maintenance of the country's qualitative edge (Rubenberg 1986: 896-915; Levey 2004: 71-87; Klieman 1998: 122-133). Bishara Bahbah identifies realpolitik as the root cause for Israel's aggressive arms exports policy. Israel due to its involvement in these conflict-prone regions was caught in

regional crisis resulting in armed insurgency and territorial disputes (Bahbah 1986: 76-101; Wezeman 2011: 1-15).

Arms sales are integrated within Israel's foreign policy and have been restructured with clear policy and export controls. This has brought greater bureaucratic accountability. The US aid in terms of preferential access to weapons systems, access to US arms market, government-to-government project collaboration and US endorsement for credibility of Israeli weapons have helped Israel in entering the international market. In the post-Cold War period, Israel has succeeded in securing bilateral relations especially in countries like India and to a lesser extent China. After normalization of relations with these countries in 1992, Israeli weapons and systems have gained a sustainable market. Israel has also succeeded in gaining a substantial share of arms market in Western Europe, Eastern Europe, Russia, Turkey and Brazil. With regard to arms transfers, Duncan Clarke has expressed that Israel's arms transfers which are without the authorisation of the US can result in political controversies and regional instability and violence (Blank 2005: 200-214; Klieman 1998: 122-133; Clarke 1995: 89-109).

The existing literature encompasses various facets of Israel's defence industry and its performance in arms trade. While a number of scholars have provided detailed analysis of the defence industry, the political debates within the defence industry, political and military sectors are referred only in the passing and this requires deeper examination. In the inner working in the defence industry, the role of the workers and labour unions has been substantial in building and the restructuring process in 1980s and 1990s. These issues are largely missing in the current scholarship. Another aspect which is largely negated is the discussion on Israel's defence industrial growth with security development on ground vis-à-vis its Arab neighbours in particular and regional security environment in general. While the role of Arab states and successive conflicts are mentioned in background and as triggers for growth phases, there is dearth in analysis on the how the defence industry impacted the security environment.

In terms of arms exports, while one group of scholarship has analysed various phases of arms sales, others have discussed Israel's arms trade relationship with other states. The thread of Israel's diplomatic ambitions is not visible across the scholarship. Arms Exports play not only an important economic role but also has crucial political and security goal which is not given sufficient attention. With regard to scholarship on Israel's arms trade, in the post-Cold War period the argument ends with the emphasis on technologically advanced systems. While this

phase opened new avenues, Israel is unable to depoliticise its arms exports. The newer developments in the last decade are out of scope in the present scholarship.

Definition, Rationale and Scope of the study

Israel's defence industry has important contribution in the strategic needs of the state. From the initial dependence on foreign help, it has come a long way and presently Israel stands as the tenth largest arms exporter in the world. Its defence industry raises important question with regard to its connection to the country's security considerations and how far has it succeeded in providing strategic autonomy within the context of the hostile geopolitical situation. The prolonged political isolation and economic boycott resulted in Israel looking at arms transfer as a means of furthering its diplomatic interests and calculations. At the same time, these objectives led to arms and security relations as a clandestine affair. The end of the Cold War and the establishment of diplomatic relations with a number of countries opened new avenues for Israel. At the same time, Israel's policies towards Palestinians and recurring cycles of violence has prevented Israel from depoliticising its arms trade, that is, treating arms exports merely as security and commercial transactions which have not happened.

Another facet of Israel's arms industry is the arms exports which has substantial contribution not only in the economy but also its diplomatic and foreign policy goals. In light of this, in the proposed research, attempt would be made to take this discussion further and present a more coherent, inclusive and detailed analysis of the defence industry in Israel.

Research Questions

1. What is the rationale behind Israel's domestic arms industry?
2. Has arms industry succeeded in achieving self-sufficiency in meeting the requirements of the IDF?
3. What is the role of external actors in the development of Israel's arms industry?
4. What is the role of arms trade in the growth of Israel's arms industry?
5. Discuss the clandestine nature of Israel's arms transfers
6. Discuss the impact of depoliticisation in arms transfers since the end of the Cold War period.

Hypotheses

- Domestic defence industry could ensure Israel's *self-sufficiency* due to hostile regional security environment.
- Arms exports continue to be dominated by Israel's political objectives as a means of reducing its diplomatic isolation.

Research Method

The proposed research would be historical and largely analytical in nature focusing on the genesis of Israel's defence industry in detail. It will also observe the patterns, nature and extent of international Military Complex and how Israel fits in the picture and rationalise its need on why the defence industry is needed and how it functions. In terms of sources, the proposed literature will rely on both primary and secondary sources. Primary sources will comprise of information from websites of prime Israeli defence industries such as IMI, IAI, RAFAEL, Elbit etc. Moreover, reports by the Ministry Defence and Ministry of foreign Affairs would also be consulted. Secondary sources will contain books, secondary reports, journals, online sources etc.

Chapters scheme

The second chapter titled *Rationale behind Defence Industry* examines the rationale behind Israel's defence-industrial pattern of growth by unearthing the background of regional conflict along with major domestic, regional and international factors that has played a significant role in the growth and development of the industry. The first section underlines the necessity of self-defence and arms procurement as well as the hurdles during the pre-state period. The next section deals with security aspect in terms of Arab-Israel conflict and the raises the subject of the state's peculiar personality affecting its security, politics and foreign policy. The third section focuses on early arms procurement efforts for foreign actors as well as domestic efforts of arms procurement. This section also offers brief background about interlinkages between defence industry and national security, economic growth and industrialisation.

The third chapter titled *The Growth of Defence Industry* examines the history, restructuring processes, policy choices and the overall development course of the defence industry in Israel. The first section looks into the course of domestic arms production and procurement from 1948 to 1967 period. This section broadly outlines the beginning stage and orientation of defence-infrastructure towards maintenance and overhaul which only expanded to production under license due to French help. The next section carries over the discussion on the evolution process in the post-1967 period that witnessed tremendous expansion and development of indigenous systems and equipments. It also touches upon the export dimension and highlights on the direction of the defence industry in the post Cold War period. The third section looks into the actors in the defence establishment such as the Defence Ministry, IDF and the defence industry responsible for arms production and procurement decision-making as well as the interrelationships among these actors that shapes the outlines of the arms policy. The fourth section briefly talks about the origin, contribution and current nature of prominent defence industries. The next section engages the contribution of the defence industry in the sphere of regional security dynamics, economy and the overall pattern of industrialisation and its insistence on technology autonomy.

The fourth chapter titled *The Role of the External Actors* uncovers the external dimension in the arms industry. In fact, the indigenisation process in the defence industry convened in direct response to restrictions in arms access, therefore its impact over defence-industrial development process in terms of limitations and opportunities from 1948 to present is accessed. In the first section, arms procurement through external influences firstly first Soviet Union via Czechoslovakia and secondly from France. In the second section, Israel's strategic partnership with the US is discussed. Both the sections also provide account of the problem areas of external procurement.

The fifth chapter titled *Arms Exports and Defence Industry* attempts to analyse the phases and process of arms exports and document its role in the overall economy. In the first section, linkage between arms exports and arms procurement is formed through utility of exports to reduce economic burden and continue the technology-intensive industrialisation process catering to IDF's needs. The next section briefly talks about the actors in arms exports decision-making represented by members from the government, IDF, defence industries etc. The arms exports policy from mid-1950s to present and the varying nature has been discussed in detail in the following two sections. The question of economic overdependence on arms exports in late

1980s and efforts to reduce overdependence, modernise and mould to meet present arms demand are considered for discussion. The last section engages into the political and diplomatic role of arms exports role of arms exports. This section purviews the impact of arms exports in foreign policy, its changing course and the political impediments. It also draws attention to the policy of peripheral diplomacy and influence of arms exports. The last section deals with the problem areas of arms exports in economy, foreign policy and national interest.

The concluding chapter presents the findings of the research and test the proposed hypotheses.

Chapter Two

Rationale behind Defence Industry

The foundation and growth of the Israel's Defence Industry is intrinsically rooted in its creation and political process. During the pre-state days recurring violence in Mandate Palestine laid the basis of armed resistance by Zionist movement that was fighting for a Jewish national home. Although armed resistance in terms of self-defence groups to protect its residents existed since 1880s, it took an organised shape only after the Arab opposition to Jewish immigration, settlement and land purchases as they paced after the end of First World War. The resulting Arab response to Jewish influx played a pivotal role in the development of both Jewish militancy and indigenous arms industry. The array of hostilities in which Jewish leadership was engaged with Arab groups and the love-hate relationship it enjoyed with the British authorities in Palestine culminated in the strengthening its political and military capabilities which were formalized after Israel's formation in 1948.

Therefore, the story of the formation of the defence industry is rooted in the history of the Jewish immigration to Palestine since the late 19th century and the resulting development in the Arab-Jewish conflict. Furthermore, in order to determine the rationale behind the growth and development of the defence industry, various notions of Israel's national security and its varying concepts are to be delved into. The Arab response to Jewish aspirations for a National Home as well as the level of conflict in its formative years of Israel developed the embryo of security. The need of defence industry and availability of crucial armaments were felt as a primary necessity for the survival and sustainability of the state. The economic objectives and the gradual role played by arms trade serve as a pertinent rationale for its burgeoning arms industry. In this respect, this chapter will attempt to encapsulate the spirit and forces that have led to the gradual construction of a stable defence industry which has played and continues to play a pivotal role in Israel's politics, security and economy.

Jewish Self-Defence in the pre-state period

While the Jewish aspirations for a National Home had existed historically, the political mobilisation in the form of Zionism had accelerated in the 19th century as a result of social and political discrimination and injustice suffered by Jewish community specifically in Europe. The search for a homeland became a prerogative among the European Jewry. The search for homeland also nurtured the idea of return to historic Palestine which was then a part of Ottoman Empire. In light of heightened political persecution of European Jews, immigration or Aliya (literally meaning ascent) to Palestine commenced since 1882 and the first settlement established in 1882 was located in Upper Galilee called Rosh Pinah. In August 1897, the First Jewish Congress was organised in Basel, Switzerland that adopted proposal to promote Jewish immigration into Palestine and strengthen Jewish national sentiment. It also sought to secure internationally recognised legal right for establishment of a Jewish home and set up an organisation to bind the Jewish community on a global level. The World Zionist Organisation was formed in the same year to coordinate and implement Zionist policies (Taylor 1959: 1-10; Mayer 2008; 89-104).

From 1882 to 1903 which is also referred as the first Aliya, around 25,000 to 30,000 Jewish immigrants settled in Palestine and they came largely from Eastern Europe and Russia and consisted of Orthodox Jews. From 1903 and until the beginning of the First World War in 1914 the Second Aliya saw around 35,000 to 40,000 Jews settling in Palestine (Lucas 1974: 42-43; Eisenberg 2000). The immigrants who came in the Second Aliya were secular Jews and helped in instituting social and political bodies in the Jewish settlements called Kibbutz. This period also witnessed establishment of political parties, self-defence groups, workers union, health and aid institutions etc. Tel Aviv as the Hebrew town also developed during this period. In the area of art, language and culture this period contributed significantly (Israel Philatelic Federation 2015)

During the course of the First World War, allied powers, that are Great Britain and France foreseeing their victory, concluded a secret arrangement to demarcate the 'spoils of the war' in the region that was under the control of Ottoman Empire. Accordingly, after Sykes-Picot Agreement was signed in 1916 it was decided Ottoman Turkish colonies of Palestine, Iraq and Trans Jordan would come under Britain influence, and France claimed control over Lebanon and Syria (Hasan 1967: 228-232). Hence, the Palestinian territories were to come under the

influence of Britain who sought Arab support during the war. It was achieved in exchange of promise of Arab statehood that led to a series of rebellions against the Ottoman forces. The promise was substantiated in the form of letters exchanged between Sherif Hussain, the Emir of Mecca and Henry McMahon, the British High Commissioner to Egypt. They are famously known as Hussein-McMahon correspondence 1915-16 guaranteeing Hussein's sons Faisal and Abdullah the Arab territories of Syria and Iraq (Taylor 1959: 10-26; Beinlin and Hajjar 2014: 2-3).

At the same time, British pacified to Jewish demand for national home through the Balfour Declaration of November 1917.¹ It announced the decision of British cabinet in favour of establishment of a national home for Jewish people in Palestine without harming or "prejudicing the civil and religious rights of the existing non-Jewish communities in Palestine, or the rights and political status enjoyed by Jews in any other country" (Israel Ministry of foreign Affairs 2015). The 1917 Balfour Declaration was later adopted in the San Remo Conference on 25 April 1920 among the victorious Allied powers and also received international sanction from the League of Nations after Britain was granted mandate over Palestine on 24 July 1922. It was however rejected by the Arabs who felt cheated as the British had earlier promised Palestine to the Arabs.

In the post-war period, the Arab nationalist movement received a severe boost after French control was granted in Syria in which case, Sherif Hussein's first son, Faisal lost his bid for Arab leadership. This development along with imposition of civil administration in Palestine under Herbert Samuel as the first British High Commissioner on 30 June 1920 resulted in Palestine-centred organised Arab national response and led to the formation of Palestine Arab Congress and the Arab Executive in Haifa (Lucas 1974: 96, 159-163). The League of Nations decision to establish British mandatory control over Palestine and incorporation of the Balfour Declaration resulted in Palestine Arab Congress demanding the withdrawal of British mandate and calling for an immediate establishment of an independent democratic Arab government that is elected by Arabic-speaking residents who had been living in Palestine before the onset of the First World War (Lucas 1974: 159-163; Mayer 89-104).

¹ The declaration named after British Foreign Secretary Arthur James Balfour was in form of a letter by him to Baron Lionel Rothschild (Taylor 1959; 10-26).

² TAAS became Israel Military Industries after Israel's formation in 1948 (Israel Military Industries 2015)

In response these developments, the Arab opposition to the British rule and growing influx of Jewish immigrants intensified. From 1881 to 1920, the Arab protests were limited to expression of verbal attacks, negative reporting in Arabic newspapers, political criticisms and complaints by Arab politicians to Ottoman authorities and minor clashes with Jewish settlers on the issue of Jewish land purchases and settlement in Palestine (Haim 1983; 3-4). Organized Arab response to the dual problem of British rule and Jewish immigration only after the demise of the Ottoman Empire and resulted in a number of riots. Although the British administration had imposed an embargo, Arabs were armed with guns and ammunitions through a number of regional sources (Steinberg 1986: 163).

In April 1920, an Arab riot occurred which was local in scale and led to death of six Jews and six Arabs. In 1921 riots broke out in Jaffa in which hundreds of Jews and Arabs were killed that led to British inquiry concluding that Arab hostility towards Jewish immigration primarily manifested in the recurring violence (Lucas 1974: 159; Caplan 1987: 641-644). Another major riot occurred in 1929 due to dispute over religious rights at the Western Wall and the Dome of the Rock in the Old City of Jerusalem in which 133 Jews and 116 Arabs lost their lives and more than 500 people were wounded. By 1930s Arab hostilities continued to accelerate due to rapid increase of Jewish immigration (Lucas 1974: 159-160; Beinun and Hajjar 2014: 3-4). The growth in Jewish population which was interrupted due to First World War reconvened in 1918 and during 1918-1924, around 40,000 Jews arrived in Palestine (Eisenberg 2000). Arno J. Mayer has noted that from 1922 when British mandate was established in Palestine, the number of Jewish immigrants that arrived till 1932 stood at 125,000 (Mayer 2008: 143).

Since 1930s, Jewish immigration soared tremendously and within ten years until 1942, around 250,000 Jews migrated to Palestine. After Adolf Hitler came to power in Germany, there was a rapid increase in Jewish immigration due to worsening in the economic, social and political plight of Jews and brought about a new sense of urgency and hastened the process of influx. Between 1933 and 1939, Germany had allowed 50,000 German Jews to migrate Palestine (Mayer 2008: 143). Due to this development and the growing nationalist struggle in neighbouring Arab states, an active militant Arab movement emerged in Palestine (Haim 1983: 33-38). In 1936, violence erupted in protest of heightened Jewish immigration and land purchases and sabotage, terror and pillage were directed against Jewish settlements, British installation and its troops. On 15 April 1936, Jewish passengers on Tulkarm-Nablus road were robbed and shot, and on following day two Arabs were killed by Jewish militias. On 19 April

1936, nine Jews were shot. On 25 April 1936, the Arab parties came together and formed a new united executive body of ten members called the Arab Higher Committee and called for general strike. The primary demands of the Committee were an immediate halt to the Jewish immigration, banning of land transfers from Arabs to Jews and a demand for Palestinian independence (*ibid*).

The British administration however allowed a limited entry of Jewish immigrants during this period. While the organised rebellion was quickly crushed by the British forces, but the revolt continued to resurface and incidents of violence continued to mushroom in the subsequent years directed against both Jews and British rule and continued until 1939 (Lucas 1974: 159-163; Gershoni 1986: 370-371). In the later years, the violence was largely subsided but intermittent violence continued largely within the Arab population and sometimes against the Jews.

As a response to violence faced by the Jewish community after the First World War, nascent efforts were made by the Zionist leaders to inculcate some form of self-defence to protect their settlements and agricultural communes against the local Arabs. The growing number of Arab protest against Jewish land purchases and the inflow of immigrants led several Zionist leaders to inculcate the movement for self-defence firstly in the urban sphere and slowly transitioning in the rural space (Goldstein 1995: 744-746).

One could identify the presence of number of small groups of Zionist settlers that set up independent self-defence cells since 1880s. A secret organisation called Bar Giora was founded in 1907. Hashomer (meaning The Watchmen) was one of the earliest Jewish defence organisation that was formed in 1909 and had not more than 100 members. These groups were the first organisations to imbibe the concept of armed strength in Zionist ethos and realised that it was natural for the Arabs to oppose Jewish reawakening in Palestine and therefore it was necessary to meet the challenge by force. In order to resist the Arab resistance there was a need to enhance and facilitate Jewish armed power and increase the scope of its effectiveness. This would lead to a positive balance of power and the power parity would be instrumental in achieving the goal of National home in Palestine (Goldstein 1995: 744-754; Lucas 1974: 167-172). The 1919 and 1920 Arab riots brought to fore the immediate need to bring about an organised force and eventually, the new labour party, Ahdut Ha'avodah took upon the responsibility for forming a defence centre and became the nucleus of a wider defence movement aspiring to attract members from groups beyond the sphere of Labour Zionism (Lucas 1974: 167-172).

As a consequence of the growing Arab protests and violence, the Zionist movement felt the need to coordinate defence network that spread across the Jewish settlements. On 5 June 1920 in the Convention of Ahdut Ha'avodah, it was decided that under the leadership of the party, a National Defence Movement or Haganah would be formed to coordinate Jewish self-defence activities. Subsequently, the defence responsibilities of Hashomer were relinquished (Lucas 1974: 167-184). In 1924 it defined itself as an underground military organisation in the form of people's militia aimed at defending the Jewish population. The new members had to undergo military training after which they were enrolled in the reserve which was led by the Haganah Command. During the Arab riots and protests that occurred in 1920 and 1921, Haganah was ill-equipped to tackle the violence and met only with limited success (Lucas 1974: 167-184; Hoyt 2007: 74-75; Goldstein 1995: 744-754).

In the initial phase, the defence infrastructure was inadequate and little headway was made in military training. In terms of arms, the primary source of supply was through theft from British army stores carried out by Jewish Legion members who fought with the British during the First World War. Additional supply was provided by the Jewish policemen working in the British administration and through purchase of small arms from local Arabs. After the 1929 riots, Haganah served as the only effective means of defence and was highly praised by both Zionist and non-Zionist leaders. It was a volunteer force with great degree of personal relationship within its members that facilitated a natural willingness and commitment towards the safety of the settlements (Lucas 1974: 167-184; Ben-Gurion 1971: 246-250). Haganah's presence and scope subsequently expanded in the coming years.

By early 1930s, the conflict between the socialist interests and the non-Zionist middle class interests became evident which led to the emergence of an alternative centre of militant and revisionist leadership in Palestine and an independent defence unit was formed in 1931 called Haganah B which attracted a number of dissidents belonging to right wing revisionist thought. By 1937 efforts were made for rejoining in the original fold and after an agreement the Haganah B was dissolved. The remaining members who were opposed to the unity formed Irgun. After the rejoining process, the strength of Haganah was more than 20,000 that included around 4,000 women (Lucas 1974: 176-177).

Haganah however suffered from paucity of armaments due to lack of funds, political conditions etc. and the quantity of weapons could suffice not more than 10,000 of its members and was handful only against minor confrontations. Although efforts were made to set up small semi-

permanent cottage type military industries that produced hand grenades, homemade bombs etc. the availability of necessary weapons continued to be acute. Haganah also secured limited access to rifles, submachine guns, two-inch and three-inch machine guns (Ben-Gurion 1971: 246-250; Lucas 1974: 176-177). Through its efforts in 1933, Haganah set up TAAS (Ta'asiya Zvai'it)² with the aim research and development of weapons but the progress was limited until the commencement of the Second World War (Hoyt 2007: 74-75).

In terms of its institutional structure and spread, Haganah received a severe boost during the Arab Revolt (1936-1939) and the subsequent riots which created favourable conditions for it to emerge from a locally organised militia to being the nucleus of a Jewish national army. The Arab challenge facilitated in militarization of Jewish settlements and arms production took pace. For its part, Haganah was responsible for the security of the Jewish settlements in the form of stockades, watchtowers and settlement efforts and the process it became a significant player responsible for new settlement programme, political and military objectives of national security and the development of the Jewish economy (Ben-Gurion 1971: 246-250). In order to contain the rising violence the British Administration occasionally took help from Haganah and sanctioned military activity. Haganah members were enlisted as supernumerary policemen and were also given military training in terms of guerrilla warfare, practice of great mobility and speed, military intelligence, reconnaissance and surprise (Lucas 1974: 178-184).

In 1938, British Intelligence Officer Captain Orde Wingate contributed significantly in Jewish defence efforts. He collaborated with Haganah and formed Special Night Squads that chose cadres which were trained in guerrilla warfare by night and introduced tactics such as mobility, speed, military intelligence, reconnaissance and surprise (Lucas 1974: 178-180). These skills introduced by him increased the military self-confidence among the Zionists and formed the basis of military efficiency reflected in Haganah and later in Israel Defence Force (IDF). After the introduction of Macdonald White paper on 17 May 1939 that limited number of Jewish immigrants to Palestine to 75,000 over a five-year period, there was a rift between Jewish and British interests. The White Paper was aimed at limiting the Jewish population to one-third, which had already touched 30 per cent of the total population and to prevent further Jewish land purchases (Mayer 2008: 152-156; Haim 1983: 33-38).

This decision caused massive outrage within the Jewish leadership denoting it as “violation of the spirit and letter of the Balfour Declaration” (Mayer 2008: 155). The cleavage gradually

² TAAS became Israel Military Industries after Israel's formation in 1948 (Israel Military Industries 2015)

widened in the following years wherein Haganah along with other militia groups such as Irgun and Stern Gang indulged in 'illegal' immigration of Jews from Europe and directed violent methods on British institutions and officials (Beinin and Hajjar 2014: 3-4; Lucas 1974: 178-184). Again since 1933 Germany under Adolf Hitler curtailed the civil and citizenship rights of the Jews and confiscated properties of Jewish community and perpetuated random acts of violence. Jews in the initial phase were encouraged or even forced to flee Germany and fled to other parts of Europe such as France, Netherlands, Belgium and the United States of America. But with the expansion of German efforts into other parts of Europe, Jews were captured and were put in concentration camps and murdered (United States Holocaust Memorial Museum 2015).

These developments put unparalleled strain upon Jews across Europe who sought a safe haven in Palestine. Since 1930s, about 60,000 Jews immigrated into Palestine. After Macdonald White Paper was released in 1939, restrictions were imposed upon Jewish immigration which spurred bitterness among the Jewish community towards the British authorities (Lucas 1974: 178-184; Haim 1983: 33-38). In other words, Jewish nationalism increasing turned militant which realised that the goals of Zionism must be achieved at the cost of blood. Thus, in the wake of the 1939 White Paper, Haganah broke off its ties with the British and indulged in illegal emigration and other acts of violence. In the post-Second world war period, the Haganah was the largest Jewish military organisation that stood against British administration in Palestine. Meanwhile, Irgun Zvai Leumi was led by Menachem Begin and known for its role in the King David Hotel bomb blast in Jerusalem on 22 July 1946 which killed 91 people including 28 British citizens (Sellers 2013: 4). The organization was responsible for the bombing of British embassy in Rome in 1946. Stern Gang was held responsible for the assassination of British Minister Resident in the Middle East, Lord Moyne in Cairo on 6 November 1944 (*ibid*: Lucas 1975: 127-136).

In terms of arms procurement, during the course of the Second World War, Haganah and its arm Palmach acquired arms from French officials. These groups also bought weapons from Egypt and other countries in North Africa. The quality of these weapons were however defective and remained limited to not more than 6,000 rifles and few hundred machine guns, sub-machine guns and mortars which was insufficient to cater to 60,000 members in Haganah (Lucas 1974: 210).

In the post-war period TAAS bought large amounts of arms production machinery from the US at the scrap metal rate of US\$75 per ton. In the Haganah budget during 1946 and 1947, the amount accorded for arms and industrial programmes was 200,000 Palestinian pounds and 310,000 Palestinian Pounds respectively from the total amount budget of 670,000 Palestinian Pounds and 770,000 Palestinian Pounds respectively. TAAS had produced 200,000 grenades, hundreds of Sten submachine guns, grenades, rifles, Dror light machine guns, British and Davidka model mortars, ammunition and 2-inch and 3-inch mortars and PIAT anti-tank weapons (Hoyt 2007: 74-75; Lucas 1974: 210). David Ben-Gurion in his autobiography *Israel: A Personal History* published in 1971 has noted that in April 1947, Haganah had 8,720 rifles for local defence in various settlements and 1,353 rifles for national defence, 1,900 submachine guns, 633 machine guns, 672 two-inch mortars, 96 three-inch mortars etc. (Ben-Gurion 1971: 248). The availability of these weapons was crucial in conflicts with the Arabs during 1947-1948 period.

After the Second World War, the newly formed United Nations sought to resolve the Palestine issue and on 29 November 1947, UN General Assembly voted for partition of Palestine into two states, Jewish and Arab. At the end of 1946, 1,269,000 were Arabs and 608,000 were Jews, however, the area designated by the UN to the Jews was 56 per cent and the area designated to the Arabs was 43 per cent. The larger area to the Jews was justified on the assumption that more Jews would emigrate in the coming years (Beinin and Hajjar 2014: 4-5). While Jews accepted the UN decision, the Arabs out rightly rejected the Partition Plan. Following the decision, a wave of violence intensified throughout the region. Although the size of the Jewish military forces and the militias was small it was better organised, trained and armed and hence succeeded in acquiring the designated territory assigned by the UN along with certain additional areas that was assigned to the Arab state. On the eve of the British departure from Palestine, the state of Israel was announced on Sabbath eve of 14 May 1947 (Beinin and Hajjar 2014: 4-5; Taylor 1959: 105-106).

Hours after Israel was formed neighbouring Arab states launched an attack and at this phase of the War, Israel received arms shipments from Czechoslovakia which helped Israel not only defend itself but also expand its territory. The territory of Mandate Palestine was therefore divided among Israel, Transjordan and Egypt (Beinin and Hajjar 2014; 4-5). Although Israel claimed victory it continued to remain vulnerable from the future onslaught from its Arab

neighbours. The situation of grave insecurity along with limited support it received from external powers led to deep suspicion with the nature of national Security.

Intensification of the Arab-Israel conflict

Since its declaration of independence Israel was engaged in a full-scale conflict with its neighbours. Despite the series of armistice agreements signed between the Arab states and Israel in 1949, their implementation was hazy due to lack of political will and the political and security nature of conflict became only more pronounced over the years. Besides the direct security threat, the political postures of the Arab states in terms of arms accumulation and open rhetoric about eradicating Israel solidified the notion of insecurity in the subsequent years. After 1948 Israel has fought three major wars, namely the Suez War, June War and the October War. Suez Canal was constructed in Egypt by Britain in 1859 and was opened in November 1869. The goal for construction of the canal was to shorten the sea routes and greater access to oil fields in the Gulf (Milner 2011). Abdel Gamal Nasser who came to power in 1954 stated three objectives namely, freeing Egypt from foreign pressure and indirect occupation; strengthening Egyptian Army to fight against Israel and construction of high dam in Aswan to irrigate Nile valley and facilitate Egypt's economy. Britain and the US were initially committed to financial aid for the construction of Aswan dam. Subsequently both states withdrew from their financial aid due to Nasser's reluctance to accept their demands for peace with Israel. As a result of their decision the World Bank also refused to grant US\$ 200 million. Eventually, Nasser decided to nationalise Suez Canal Company and utilise the revenue for construction of dam in Aswan (Milner 2011; Shlaim 2004: 657-673).

Capitalizing on this situation, Israel joined hands with Britain and France and initiated a military campaign against Egypt with an explicit purpose of reducing Nasser's growing regional influence. The crisis was seen as violation of the UN Charter and in order to force withdrawal of British, French and Israeli forces from Egypt, India co-sponsored resolutions in the General Assembly (Ibrahim 2011: 17-30). Due to joint efforts of the US and Soviet Union under the shadow of the United Nations, Israel was forced to retreat back to armistice lines and evacuate from the Sinai Peninsula and the Gaza Strip it occupied during the war (Beinin and Hajjar, 2001).

Relations among Israel and other neighbouring Arab states had been strenuous throughout 1960s. Israel had been traditionally vocal against Syria and declared that unless the Syrian regime halt cross-border attacks, Israel has to launch full scale offensive (Caplan 2010: 143-148; Quigley 2013: 3-15). Syria was allegedly informed that Israeli troops were massing in Northern Israel bordering Syria and therefore requested Egypt to launch an offensive against Israel. Egypt remilitarised Sinai Peninsula and ordered U.N. observers stationed between Israel and Egypt to evacuate their positions. They also occupied southern tip of Sinai Peninsula at Sharm al Shaykh and proclaimed a blockade of the Israeli port of Eilat on the Gulf of Aqaba. Israel during this diplomatic and military impasse launched a pre-emptive attack on Egypt and Syria on 5 June 1967. Jordan too joined the conflict. The war that lasted for six days decisively proved superior military capability of Israel as it destroyed the Arab states' air forces on ground within few days. An important outcome of the war was the territorial expansion of Israel and Israel occupied Gaza Strip, Sinai Peninsula, West Bank and Golan Heights (Caplan 2010: 143-148; Sharabi 1970: 49-66).

Towards regaining their territories lost during the June war, on the Jewish holy day of Yom Kippur, the forces of Egypt and Syria launched a military campaign and attacked Israeli occupied Sinai Peninsula and Golan Heights. The surprise attack bore some early victories for the Arabs and Egypt re-captured a strip of Sinai Peninsula. After the war was over, the US intervened and undertook a diplomatic strategy of limited agreements over Sinai Peninsula and Golan Heights. As the diplomatic approach reached stalemate by late 1975, in 1977 Sadat undertook a visit to Jerusalem and paved the way for Camp David Accords and Egypt-Israel Peace treaty in 1979 (Beinin and Hajjar 2014: 8-9).

The situation of recurring conflict and intense geopolitical context had made arms necessary for Israel's long term security and this has been realized early. The Arab-Israel war in 1948 and the claim by Arab states to eradicate Israel have infused the fear for survival since the beginning. The perceived existential threat from the Arab states has been responsible for providing the impetus for development of well-skilled army and a formidable military machine. Since the establishment of the state its leadership has perceived itself as standing against enemies and adversaries that discard the existence of the Jewish state (Dror 2011: 1-9; Inbar and Sandler 1995: 41-59; Inbar 1996: 41-64). It is widely argued that if the costs are not high, nearly all Arab actors would have eliminated and exterminate Israel.

The zero-sum dynamics has been largely prevalent in Israel's political psyche that has resulted in a strong sense of existential fear. Moshe Dayan noted the pre-1948 recommendation of Mufti of Jerusalem that Jewish population has become too large that it must be eradicated by military action (Dayan 1955: 251). He has mentioned that during the negotiation on partition of Palestine in 1947, the delegates of the six Arab states have expressed their intention of destroying the newly formed state and full military operation was conducted against the Jewish state since the UN approval in November 1947 (*ibid*). The scar associated with the invasion plan by the Arab armies with the aim of ceasing the Jewish territories has had a long term effect in nurturing the fear of existential threat in the coming years. Dayan has also mentioned the lack of political will by Arab armies for a negotiated peace that is reflected in the Arab violation of the three ceasefire orders imposed by the UN Security Council during the first leg of the war from 15 May to 13 June 1948 (*ibid*). When the permanent truce was announced in July 1948, the Israeli army continued to face the aggression and border skirmishes, fragmented cross border militia attacks, robbery and theft continued in Israel in subsequent years (Inbar 1996: 41-64; Rodman 2001: 71-80).

Although Israel had signed armistice agreement with all the neighbouring Arab states under the auspice of the United Nations in 1949, its leadership was unconvinced with the level of commitment by the Arab states. The Arab states had also questioned the character of the Armistice Agreements and on 1 April 1950 issued a joint statement stating that they would not conduct peaceful negotiation with Israel and any state doing so would be considered as a traitor and an outcast (Dayan 1955: 254). Therefore the idea of progress towards peace with Israel came to be regarded as treason (*ibid*). This position and untoward political actions by the Arab states have led to forging a consensus of the fear of an impending war and a profound existential threat among the Israeli leadership.

Besides facing aggression on the political, diplomatic and military level, economic boycotts by Arab states have also intensified the political and security ante in Israel for self-reliance and security. Most significantly, the blockade of Suez Canal for Israeli shipping and interference with the passage of ships heading towards Israel triggered security concerns and hostility (Shlaim 2004: 657-673). Israel has pointed out that the blockade imposed by Egypt was a violation of 1888 Constantinople Convention whereby states contiguous to the Suez Canal would be granted free and open transit through the Canal in times of both war and peace without the distinction of flag for every vessel of commerce and of war. Egypt's rejection of

this facility also ignited and furthered the level of victimisation in Israel. Israel has emphasised that Egypt's rejection is not only a clear violation of Constantinople Convention but also the Armistice Agreement signed between the two states (Milner 2011).

It was concerned about the widespread boycott machinery applied by the Arab states with the intention of preventing trade between Israel and the outside world. The Arab League had established a specialised bureau called Central Boycott Office in 1948 (Weiss 2015: 1). Arab states had played an important role in blacklisting international firms that had trade links with Israel as well as denying service to airlines and shipping firm in Arab airports and harbours that had any contact and connection with Israel. The boycott focused on refusal to share information on the movement of diseases or locusts (Weiss 2015: 1-2; Dayan 1955: 256-258). These long ranging efforts at shunning Israel from nurturing economic and political relations with the international community along with the direct military and political threat had continually reaffirmed the sense of insecurity and created a feeling of existential threat which has played a triggering role in constituting Israel's arms industry.

Besides this, Israel's security is hugely affected by its peculiar geographical position that has direct impact on its strategic discourse. It has prompted it to facilitate the development of armaments at an early stage. In terms of its inherent sense of insecurity, its small size has highly affected the notion of security in general. The geographical size of the state is small with nine miles at its narrowest and the borders are largely flat which can be easily infiltrated. Hence, most of the population centres and industrial assets are within easy reach of neighbouring states. Moshe Dayan has rightly mentioned that the notion of 'frontier security' has little meaning in the context of Israel's geography (Dayan 1955: 250). The entire country is the frontier that can be potentially affected by any hostile activity from the territory of neighbouring states.

The small size of the state implies that it has serious lack of strategic depth and in case of a war, it does not have the luxury of engaging in hostilities. Whether a full scale war and even low intensity conflict along its borders will invite heavy damage to civilian life and resources. While a low-intensity conflict could potentially cause enormous loss, prolonged full scale conflict could put the survival of the state at stake (Rodman 2001: 71-80; Freilich 2006: 635-663). Dan Horowitz has argued that there are two aspects to the problem of strategic depth. Firstly, the problem of limited area required for operative manoeuvrability of the army in case of war which can severely affect Israel's ability to withstand enemy attack and its capability to launch counterattack effectively. Therefore any tactical attack can potentially lead to strategic threat.

Secondly, the territorial compulsion translates into the quantitative disadvantages or imbalance of force it faces that can reiterate the problem of strategic depth. Therefore Horowitz has claimed that for Israel, the problem of space becomes the problem of time (Horowitz 2013: 11-47).

Related to the question of territorial depth, the quantitative disadvantage it suffers in terms of demography also creates a security concern. In 1948 the population of the new state was 600,000-650,000 as compared to millions in surrounding Arab states. The demographic imbalance continues to be significant factor in its security perception that has influenced the structure of Israel Defence Force (IDF). The Jewish population in the subsequent years increased due to aliya but did not redress the disparity in demography between Israel and the Arab states (Horowitz 2013: 11-47; Rodman 2001: 71-80; Freilich 2006: 635-663). In effect, Arab states were capable to surmount a large standing army in contrast to Israel due to its small population size

Therefore, despite the security challenges, due to small population Israel could not afford to maintain a large army as a large army would paralyse economic growth. Hence, besides the small standing army, it is supplemented by conscripts serving through mandatory military service and reservists who serve few months army depending on their specialities. The sheer size of Arab armies coupled with Israel's own geographical constraints has ensued a sense of vulnerability in Israel (Dror 2011: 9-19).

Israel and Arms Procurement

After 1948, Egypt along with other Arab states had explicitly hinted on the coming second round to 'reclaim' Palestine (Dayan 1955: 254-55). Following the war, it had already hastened arms procurements from Britain which caused anxiety in Israel. Since 1945 Egypt had raised objection to British presence in Suez Canal region. Earlier, in 1936, UK and Egypt had signed a twenty years treaty that authorized British presence in the Suez Canal to deter Italian aggression. After the Second World War, when the Italian challenge was diluted, Egypt sought to revoke the treaty that legitimised British military presence in the Canal region. Britain was however reluctant due the prevailing current of Cold War and hence Britain maintained an uneasy control of the Canal and insisted its hold based on the 1936 agreement (Slonim 1987: 137-138; Shlaim 2004: 657-673).

After the 1948 Arab-Israel War, Egypt relations with Britain improved and Egypt talked about Anglo-Egyptian efforts for security coordination to ensure stability in the region which had assured Egypt access to British armaments. Israel was deeply concerned with the security as well as the open rhetoric of the upcoming Second round to defeat Israel. Therefore, Egyptian intent for initiating technical talks with Britain on defence matters in March 1949 instilled a deep sense of fear. Egypt was keen to develop, equip and organise a large land army with British help and King Farouk talked about improving political and defence relations with Britain and agreed to the presence of British base in the country (Slonim 1987:138). At the same time, Britain was interested in developing allies in the region that can counter Soviet presence in the region. As a result of Cold war priorities, Britain along with the US sought to formulate a defence framework in the region which is linked to the NATO or the European Security Framework (*ibid*).

The 1950 US National Security Council report titled *United States Policy toward Arms Shipments to the Near East* stated:

Top secret consultation between the Governments of the United Kingdom and the United States has revealed plans of the British Chiefs of Staff for a form of Anglo-Egyptian military partnership to assist the defence of the Near East in case of Soviet aggression. These plans call for the strengthening of the Egyptian army with British military equipment, including heavy items. It is foreseen that one of the results of this development will be the increasing dependence of the Egyptian army upon the United Kingdom for military supplies and replacements, a fact which will enhance the prospects of continued British presence in the Suez Canal zone (Slonim 1987: 138).

On one hand, Britain was seeking to extend its lease in the Canal region and buying time by supplying arms. On the other hand, Egypt was unhappy with the prevailing British presence but was appeased by arms supplies. Israel's initial response with regard to increasing arms capability of Egypt was to retort it through diplomatic efforts. Top level Israeli officials had regularly expressed their anxiety on Egypt's growing arms building and its potential fall out in the region and on Israel's security. President Chaim Weizman met with US President Harry Truman on 8 March 1948 raising concern over the security situation and immediate requirement for arms (Gazit 1987: 137). While British and American leaders argue that military help to Egypt was aimed at maintaining internal law and order, Israel raised question on how does the content of these supplies which include heavy tanks and artillery, destroyers, submarines,

dozens of Vampire and Meteor jet planes etc. cater to law and order situation and was convinced of its potential use against Israel (Slonim 1987: 138).

Britain was also warming up with Jordan during this period to protect its security interests in the region and showed interest in consolidating the two sides of River Jordan, that is, including the West Bank. The British leadership sought to obtain some Anglo-American announcement to demarcate the borders in the region which would ascertain West Bank within Jordanian territory. But the US was not inclined towards this suggestion to publicly accept the constitutional union of TransJordan and Arab Palestine. Anyhow the 'political cuddling' between Britain and King Abdullah caused distress with Israel (*ibid*).

Although Israel received arms from Czechoslovakia during the 1948 war; the supply source wore thin by the end of the year and even the inflow of light weapons halted by 1950. Eventually by 1950 few members in US Congress raised their concerns over the British arms supply to Egypt and its effects on the Israeli security and the region's stability. The US was anxious about the impact of Egypt's arms accumulation and the possible arms race between the two states in which Israel can restart military relations with states from the Eastern Bloc (Ben-Tzur NA: 1-6; Shlaim: 2004: 657-673).

At this stage the US, British and French leaders consented to draw a security map for the region that would highlight on the trail of arms supply to the region. While the US aimed to appease Israel by curtailing arms supply to the region, Britain was keen to ascertain the clear demarcation of borders which would result in union of West Bank with Trans Jordan and restrain Israel's territorial growth. The declared objective of the security map was to ensure stability and effective prevention of the use of force or threat of use of force by any state in the region. It also asked states from the region receiving arms to restrain from any act of aggression against other states in the region. Therefore, it was designed to encapsulate issues such as arms, borders and a regional pact for non-aggression (Slonim 1987: 138).

The roadmap ensued the development of a tripartite declaration by the US, Britain and France on 25 March 1950 with the aim of guaranteeing the territorial status quo determined by the armistice agreements between Israel and Arab states and close consultation between the three powers to constrain Israeli-Arab arms race and inhibit from supplying arms to states displaying aggressive intent (Crosbie 1974: 6-8). Diluting the arms race between Israel and Arab states and

thereby lowering the propensity of conflict would enable the Western powers to consolidate their security plan against the Soviet Union in the region. The Tripartite Agreement also facilitated the formation of Near East Arms Coordinating Committee (NEACC) in 1952 to coordinate arms flow into the region (Steinberg 1998 b: 107; Crosbie 1974: 7-8)

As the result of the Tripartite Declaration, arms embargo was imposed in the region which had created additional constraints on Israel's limited arms accumulation process. Gerald Steinberg has commented that the declaration and the resulting arms quarantine has had a long term effect on the development of the indigenous industry. Firstly, the over dependence on Britain and France for arms and in limited quantity that barely caters to Israel's internal security has instilled a level of vulnerability. The vulnerability surfaced due to periodic withholding of arms by Britain and France to Israel and Arab states in accordance of the regional interests of the Western powers. Secondly, Israel was concerned about the continued British military support through training and equipments to Egypt and Iraq. In 1955, Egypt signed a deal with the Soviet bloc worth US\$250 million for supplying modern weaponry (Becker 1986: 5). Therefore in response, Israel started exploring the options by offsetting the potential imbalance through acquiring arms by means of foreign purchase, indigenous improvements and small arms. The question of nurturing a domestic arms industry was therefore espoused during this period.

The goal for an indigenous industry received a boost from Israel's core Zionist principles of self-reliance, self-defence and independence that led to the formation of Israel. Steinberg has observed: "Following independence, the themes of self-emancipation and the liberation of Jews from the dependence on Gentiles found expression in the growth of the military establishment and the creation of a local arms industry" (Steinberg 1986: 164). Therefore, the security question intertwined with the deprivation of arms supplies from external powers in the initial years had motivated to emancipate itself in adherence to the Zionist ethos of self-reliance, self-defence and independent functioning. The development of indigenous arms industry tended to satisfy Israel's political, diplomatic, security and economic needs.

Yehezkel Dror noted that in patterns of Israeli statecraft, four lessons have been widely accepted subconsciously and sometimes explicitly and emerge from time to time. Firstly, it is accepted that Jews are strong people and only through means of long and hard struggle, the goal of survival and self-sustenance can be assured. Secondly, Israel must be ready for new hostilities and aggression in the present and future. Thirdly, in respect to its security and self-preservation Israel cannot rely of others. Fourthly, in order to ensure security against

aggression, Israel must have massive hard power at disposal. These lessons has been instrumental in shaping Israel's strategic discourse and formation of a national security strategy aimed to ensure Israel's ability to exist by force of arms and provide deterrence (Dror 2011: 12-16).

Israel's security policy has continuously highlighted these goals of security, self-help and survival. The policy has emphasised on the need and freedom to act against aggression and hostilities through an evolved and developed military capability; to succeed in responding unilaterally to emerging security challenges; and to secure its position in the contentious region as a deterrent power. The domestic arms industry has reflected this vision which has been espoused during the initial years of uncertainty.

Although, the foundation of domestic industry under the leadership of Ben-Gurion started in 1950s, until 1967 Israel was anxious due to the prevailing uncertainty over arms procurement. While it received armaments from Czechoslovakia on a limited scale until 1950 and from France since 1955, it was lacking an ally that could provide a credible source of armaments (Crosbie 1974: 3-6). Again, most of the arms supplying states preferred selling arms to the Arab states, Israel at the same time, lacked political and economic resources to procure armaments from a number of arms supplying states. In this respect, to discuss the rationale behind the growth of the arms industry another major facet is the role of French arms embargo in 1967 which has played a major role in magnifying the size of the arms industry and production of indigenous armaments.

In June 1967 war, Israel took control over West Bank from Jordan, Gaza Strip and Sinai Peninsula from Egypt and Golan Heights from Syria. As a result of the war and its consequence, France imposed an arms embargo on Israel. The Britain which was due to export new Chieftain tanks denied supply as a consequence of the new political developments in the region. At the same time, the Arab states continued to gain arms support from the Soviet Union. Due to the French arms embargo, Israel found itself dependent entirely on the US for crucial combat systems in tanks and aircrafts. The US while agreeing to sell tanks and aircrafts was unwilling to provide the latest weaponry (Hoyt 2007: 85-86).

Under such circumstances, the domestic arms industry witnessed a profound shift after the June War. While the strategic defeat by the Arab states intensified their commitment for a military

option against Israel, the external powers either imposed arms embargo on Israel such as France or remained inconsistent in supplying arms due to periodic policy reassessment, utilising arms as a political leverage and partial embargoes as the US (Klieman and Pedatzur 1991: 71-79). Therefore, the domestic military industrial growth in Israel increased by four times in comparison to other industrial growth between 1966 and 1973 and military industrial production increased fivefold during the same period. Investment in Defence R & D was hiked by 300 percent between 1966 and 1972. Private firms were invited for the first time to bid in the defence sector. The defence industry in order to substitute imported systems and deter future embargo or pressure started large scale production of Merkava tanks, new version of Sa'ar fast attack craft and Kfir fighter etc. (Steinberg 1986: 282-283; Hoyt 2007: 83-88; Klieman and Pedatzur 1991: 71-79).

Besides, the domestic arms industry has far reaching repercussions on Israel's economy. Shimon Peres, a key player in the domestic arms industry, has stated that "The setting up of local industrial and research organizations is not only a political and strategic concern, but it is of far-reaching economic significance" (Steinberg 1983: 285). In terms of economic needs, the incorporation of arms industry in the economic and industrial designs has allowed for import substitution and in theory an improved balance of payments situation. Besides the pressures imposed by arms embargoes by external powers economic calculations had an important role to play in nurturing the growth of indigenous arms industry. There was a realisation by economic and defence analysts that it was economically efficient and cost-effective to produce certain weapons domestically than rely on imports (Steinberg 1983: 285-297).

Arms industry was aimed to provide an industrial infrastructure in the country and harness and bring innovation which can trickle down to civilian sector. Economic considerations are pertinent as military-related industries can lead to development in isolated and undeveloped areas of the state and provide employment. Therefore, the growth of arms industry has facilitated the industrialisation of the economy and provided source of technology, facilities, skills and employment. Although defence industry does not produce consumables but diverts other resources from their production, due to Israel's security needs, along with the sparse resources available in a limited area with limited amount of water for agriculture, defence industry has been seen as a credible source for industrialisation (Steinberg 1983: 285-297; Steinberg 1986: 167-184).

Another major economic factor is the role of arms sales in Israel's economy. Military sales are seen as a highly profitable component and many arms producing companies direct more than half of their total output for exports. The hallmarks of Israel's arms industry and the demand for Israeli military goods are attributed to combat experience, insistence for advanced technology and low costs (Klieman 1985: 15-29). Israeli military products are combat-tested due to continuous level of conflict and have repeatedly demonstrated their capabilities. Israel has also insisted on improved and skilled research and development which are comparable with the military produce of advanced developed countries. Israel due to its security concern has been keen to maintain qualitative superiority and technological innovation in armaments.

Due to stress on industrialisation as a model of economic growth which is technology-intensive, the focus is on the defence sector for new industrial technologies, facilities, techniques and products. In addition, Israel has focused on cost effective solutions in arms trade that has encouraged buyers from development industries to invest in its military hardware. Along with the low price, Israel has provided assurance for resupply of armaments which has contributed to the growth of the export market (Bahbah 1986: 19-31). In the initial years, Israel received considerable sales through selling surplus Spitfire aircrafts and reconditioned rifles. In the preliminary period, the arms trade sector received a boost through selling arms to Netherlands and West Germany. During 1960s, it developed a considerable market in Africa (Klieman 1984: 5-9, 10-16).

At the same time, the size of domestic arms market is small. The IDF due to its small size while being the primary consumer of Israeli defence produce and technology consumes only a small quantity of domestic defence purchase. In such context, arms exports play an important role in technological and economic stability of domestic arms industry. Due to technology and capital intensive nature of defence industry in which large scale production has the effect of reducing the unit cost of the military commodity and also lowering the R&D costs and tooling costs, arms exports helps in reducing the cost of development and procurement of weapons for the Israeli army (Steinberg 1983: 285-304; Steinberg 1986: 183-188). In other words, as long as the IDF is the only consumer of the indigenous industry, Israeli economy has to bear the entire costs of R&D but capital investment can be neutralised by foreign sales as they would help in recovering the costs. (Klieman 1984: 44-47).

The highly skilled training and the technical efficiency in defence sector have indirectly contributed to the civilian economy. Some of the results induced through military research and development are available to civilian economy. The transmission of technology from military to civilian sector has been in the form of both skilled employment and products. A huge number of personnel working in civilian technology-intensive sector have received their training in military research, development and production activities. Defence sector has also permeated in civilian sector in high technology civilian manufacturing facilities such as aircraft production and electronics (Dvir and Tishler NA: 201-203). The relationship between defence technology and civilian technology has been discussed in Chapter three.

Conclusion

The question to why Israel needs arms is rooted in the historical and political origins of the state. In the pre-state days, the Jewish self-defence organisations have played an important role in setting up the earliest weapons infrastructure in Israel. The need of an arms industry and self-defence groups was rooted in response to security and threat perception vis-à-vis local Arabs. The response of the local Arabs and the nascent Palestinian nationalism came into conflict with the aspiration for a national home manifested through the Jewish immigration in the early decades of twentieth century. After the development of self-defence groups and the nascent arms industry the framework expanded after 1948. In terms of the self-defence groups especially the Haganah, it was largely incorporated in the formative stages of IDF. In the early years, the arms industry grew slowly. But it is not safe to assume that the arms industry is a product of only natural conditions and several factors have been involved in the making of the present state of Israel's arms industry. The security prerogative after the formation of the state only increased in the following years and Israel was engaged in numerous wars with its Arab neighbours and non-state actors such as PLO and Hezbollah.

Due to the continuous hostilities, Israel was in dire needs of arms in the formative years. But the military assistance to Israel by external powers was motivated by the latter's respective self-interest and hence arms procurement process was infrequent and slow which received further halts due to implementation of Tripartite Declaration in 1950. At this period, Israel was agitated by its failure to procure sufficient quantity of imported weapons while Arab states continued to gain access to weapon both from Britain and the Soviet bloc. Besides the uncertainties in arms import process, Israel lacked a reliable ally to furnish it with updated armaments for a long

period of time. Additionally, France which supplied Israel with weapons since 1955 imposed an arms embargo in 1967. The arms embargo as well as infrequent arms supply from the US also provided the impetus for the growth of the arms industry.

At the same time, the unique geographical position in terms of its small size and small demography as compared to the combined political and economic resources of Arab states has created a strategic imbalance. These problems are intensified further by the non-recognition and hostilities of Arab states towards Israel which has exhibited their will to destroy Israel. These politico-security compulsions have prompted Israel to take recourse to domestic arms production to guarantee its political existence and attain certain level of individuality in security decisions.

Furthermore, the economic context has also facilitated the development of arms industry. The production of arms domestically has induced import substitution and has led to industrialisation of the state. In terms of industrialisation, arms industry has not only nurtured skilled employment and underwent innovations in technology through R&D and capital investment but has promoted developing in the less populated areas of the country. Due to small market for arms in Israel, the defence industry has largely targeted for foreign sales. The aspect of arms sales has added a new dimension to the economic consequence of arms industry. Due to technologically efficient and low cost nature of Israeli arms products, it has successfully captured foreign markets which has not only helped to reduce the economic cost of arms production but also aided in reducing trade imbalance. The growth of military technological industrial complex in Israel in which the military elites have strong influence has added another important dimension to the growth of arms industry. Therefore the multifarious conditions and the political, economic and importantly security needs has justified the growth of Israel's defence industry.

Chapter Three

The Growth of Defence Industry

The growth and evolution of Israel's defence industry is the result and consequence of the immediate strategic and security concerns that were affecting and endangering the existence of the nascent state. Steps were pursued towards mitigating them through acceptance of the regional realities and planning towards development of strong and qualitative nature of the armed forces. In this direction, availability of necessary armaments was vital. The process for acquiring arms in the nascent state was however hampered by external political embargoes and limited internal resources. The complexity of the situation multiplied on the face of intense hostilities towards Israel from the Arab states. After external means of procurement became problematic, Israel embarked on a policy of indigenous development of arms. Due to financial and technical shortcomings, a rapid expansion was possible only after 1967 and led to the advancement in defence technology and a position of self-sufficiency. Economic susceptibilities, changing perceptions of security and transformation in regional and external environment forced Israel to reconsider its policy of arms production and since the 1990s, a high degree of economic and political restructuring has occurred with the defence production. This chapter delves into the growth of the defence industries, its repercussions along with the positive and negative role played by the external actors in the process of evolution of the defence industry.

The Growth during 1948-1967

The rationale of Israel's arms industry is rooted in its security, relative international isolation and the absence of reliable military allies. The history of conflict beginning with the Jewish settlement in Palestine and the subsequent Arab-Israel war of 1948 had espoused a high level of anxiety on Israel's security (Steinberg 1986: 163). In the 1948 war, the death toll in Israel was 6,000 or about one percent of the nascent state's population. The war reflected the paucity of arms that Israel was able to produce and procure. Its armoury consisted of few tanks, light wheeled vehicles, small arms, mortars and light artillery (Hoyt 2007: 75). While the local defence industrial base provided significant input, concerns were raised over the insufficiency of the military hardware for future security. The conditions of extreme vulnerability, fears over

the survival as well as the tiny demographic size of the state have added to the threat. The response to these threats was inadequately catered by the low quantities of armaments which were available during this period.

It became imperative for Israel to develop reliable channels for arms procurement. These channels were cut short by the numerous embargoes imposed by external actors that restricted the process of acquiring arms. Earlier in 1929 in the aftermath of Arab-Jewish riots, the British administration restricted the sale of weapons to Jewish community in Mandate Palestine settlers (Steinberg 1986: 163). After Israel's statehood in order to reduce the propensity of the conflict in the region, the US, Britain and France imposed embargo further to contain the flow of arms in to West Asia, thereby depriving Israel of arms required for its security and in case of conflicts with the Arab states (Lifshitz 2010:266). The Western powers also attempted to establish a monopoly over the supply of arms to the Arab countries and deter Soviet Union from gaining foothold in the region.

The resulting uncertainty in terms of arms procurement had contributed to a national temper for domestic arms production and development. In this direction, Prime Minister David Ben-Gurion had paid consideration attention in the development and expansion of initiatives taken by the pre-state Haganah (Klieman and Pedatzur 1991: 71). The defence infrastructure predating the formation of the state played a major role in self-defence operations against local Arabs.

Earlier in response to the arms sale restrictions during the British mandate as well as due to growing threat to Jewish communities in Palestine, self-defence groups such as Bar Giora, Hashomer and later Haganah initiated a network of small scale workshops to produce small arms and ammunitions primarily for self-defence and for security campaigns (Goldstein 1995: 744-746). During the Second World War, Haganah had succeeded in setting up a number of underground factories stressing on production of small arms (Hoyt 2007: 74; Goldstein 1995: 744-746). At the preliminary level of arms production in the post-Second World War period, Histadrut had granted high priority to defence research, development and industrial infrastructure. In this respect, significant financial contribution was made to R & D programmes for arms production. In 1948, Haganah was incorporated and formed a major basis for the foundation of Israeli Defence Force (IDF) and stress on defence R & D continued and accelerated. In this direction, science corps was established within the IDF to convene research and development not only addressing to the field of defence but in larger functioning of government institutions.

Ben-Gurion's cabinet was aware of the critical defence needs and was deeply perceptive to the importance of not only the role of erstwhile the self-defence groups such as Haganah but also small arms producing local bases in the security imagination of the state. Therefore, the new state attempted to harness the role of the defence production programme through expansion of these existing facilities as well as introducing new infrastructure. The need to incorporate domestic defence-industrial base in the security strategy was also guided by Zionist ideals of self-reliance, self-defence and independence (Steinberg 1986: 164; Lifshitz 2010: 266-267). In other words, the establishment and development of domestic defence industrial base fits the Zionist vision of self-emancipation and independence from dependence of external forces. During the conflict leading up to and in the Arab-Israel war of 1948, TAAS had hastened the production of small arms and equipments and initiated the manufacture of grenades, rifles, Dror light machine guns, Sten guns, British and Davidka model mortars, PIAT anti-tank weapons, ammunitions etc. (the US Congress Global Arms Trade 1991: 93; Hoyt 2007: 2007:274-275). The focus on arms production remained narrow and was stressed on small arms in the preliminary years.

Besides the need to nurture a domestic base for arms production, Ben-Gurion's leadership was aware of the need to forge diplomatic connections with external powers for arms procurement for long-term security (Lifshitz 2010: 266). The political elite sought to establish a two-track diplomatic and industrial policy to ensure supply and maintenance of arms. The policy was aimed at seeking an alliance with a great power patron and at the same time facilitating efforts to establish and nurture a domestic defence industrial base (Steinberg 1986: 164).

The commitment to harness the two-track policy of arms production and procurement was prevalent in the pre-state period. Ben-Gurion who during the onset of the Second World War was serving as the Chairman of the Executive of the Jewish Agency and observed:

We would not be up against the Arabs of Palestine, but the Arab states. The Haganah, operating as an underground movement, could neither produce heavy weapons nor train its members in their use. We must therefore buy heavy weapons in good time and lay the foundation for an industry capable of building them..... (Hoyt 2007: 74).

Towards the completion of the state formation process and in its efforts to ally with a great power, Israeli leadership emphasized on gaining access to or membership in the Western defence community. The dual strategy of developing a domestic industry and obtaining access

to advanced weapons system from developed countries was ascertained to enhance the security of state from threats to its survival (Lifshitz 2010: 266; the US Congress Global Arms Trade 1991: 93-94). Besides the regional and global contexts, the Tripartite Agreement resulted security uncertainties for the new state and Ben-Gurion continuously draw attention on the need to forge domestic production. In the 1949 budget speech in the Knesset the goal was reiterated and came into political debates in the following years (Hoyt 2007: 75-76).

In 1950, the IDF and the Defence Ministry underwent reorganisation to orient emphasis on military industrial development. The responsibility for finances, acquisition, development and production of arms was delegated to the Defence Ministry. The service sectors such as medicine, transport etc. were nurtured to cater to the defence needs of the state. Defence-related items such as chemicals, metals and machinery received protectionist policies (Hoyt 2007: 75-76). The systematic arrangement was directed to channelize the growth process on a productive level and aimed at providing extensive resources for defence building including armaments.

As part of this initiative, during 1949-1955, there were establishments and expansion of firms which became the primary producers in the defence industry such as Israel Aircraft Industries (IAI), Israel Military Industries (IMI) or TAAS, Israel Weapons Development Authority or RAFAEL and the Renovations and Maintenance Centres within the IDF Logistics Branch or MASHA. Although it was feared that the establishment of a self-sustaining industry would strain the economy due to the small size of the Israeli market to unreasonable extent, Ben-Gurion and his cabinet insisted on the development of indigenous industry (Dvir and Tishler NA: 195-197). In 1953, TAAS expanded production by over 50 percent emphasizing mostly on light arms and ammunitions. There were reorganisation of the R & D component of the IDF and the Defence Ministry thereby moving the Science Corps from the IDF to the Defence Ministry and MASHA also started renovation and maintenance of diverse equipment stockpiles (Hoyt 2007: 69-73).

In 1952, Israeli leadership authorized the establishment of IAI for the purpose of overhaul and maintenance of both civilian and military aircrafts. An electronics firm Tadiran was built for manufacturing batteries. An important observation in the formation of IAI and Tadiran was the absence of significant sources of capital or technical cooperation from external powers (the US Congress Global Arms Trade 1991: 93-94). In other words, the development process of IAI and Tadiran is more or less indigenous and based on the principle of self-help and self-reliance (Hoyt 2007: 69-73). The nascent industry that developed during this period expanded in the following years. The 1950s decade also saw the establishment of few private industries such as Soltam that was set up as a joint venture between Koor Industries and a Finnish consortium that specialised in the production of mortars and canons. Tadiran was also built that largely catered to Israel's defence communications needs (*ibid*).

The early years suffered from numerous shortcomings in terms of shortage of funding, technology and quantity of armaments and equipments. The affect of the 1950 Tripartite Agreement which attempted to restrict and control the flow of arms into the West Asian region stressed the arms procurement process that was highly unfavourable to Israel (Slonim 1987: 135-38). In effect, the quantity and quality of arms suffered and Israel was forced to purchase equipments and armaments from whoever was prepared to supply and at whatever cost thereby causing a financial and logistical distress. Due to the Tripartite Agreement and the resulting embargo along with absence of a reliable partner under such condition, the arms support was insufficient and had severe effects on standardization and maintenance. It relied on trial-and-error framework to match the spare parts with number of incompatible systems. It was forced to rely on the out-of-use systems that were maintained at high costs and equipped with parts on trial-and-error basis. The drawbacks as a result of technical insufficiency and scarcity loomed gravely over the defence industry (Hoyt 2007: 76). The shortcomings in terms of defence procurements from external actors became a crucial factor in Israel's drive for technical autonomy in the later years.

These issues were further compounded by the constraining financial resources. Restriction from access was aggravated by limiting access of financial input to support the plan for defence industry. Financial input was based primarily on grants from the US, financial transfers from the Jewish diaspora and the 1953 Reparations and Restitutions Agreement with the Federal

Republic of Germany³. The Reparations and financial help from Germany were useful for providing funding for the dual use technology for IAI or and the metals industry such as Urban Works and Koor Industries but the financial access for the defence industry was limited (*ibid*).

The paucity of weapons, compromise on technology in weapon systems and equipments and the financial constraints drove the policy makers to highlight on self-help mechanisms for industrial growth. Due to unique political and geographical conditions, it was impressed on nurturing technology that fitted with Israel's security format. The zeal for maintenance and high rates of operability in weapons and equipments was visible in the industrial pattern of the newly developing defence architecture. Therefore, the context to fit Israeli's security needs was prioritised in the weapons building and maintaining was pursued through trial-and-error process. The maintenance of ground forces did not require major funding and demand for sophisticated weapons was low (Hoyt 2007: 76-79).

The defence industry received quantitative and qualitative enhancement due to support in the mid-1950s primarily from France. Although short lived, the alliance can be ascribed as a helpful phase that has enriched and cultivated a strategy for technological stability in the nascent Israeli defence industry. The French support blossomed in 1955 when Egypt announced the finalization of an arms deal with Czechoslovakia which orchestrated a mindset of strategic threat through Israel's security perspective (Lifshitz 2010: 267; Brauer 1998: 5). The arms agreement between Egypt and Czechoslovakia had provided the former with large number of sophisticated Soviet model tanks and aircrafts and was an alarming sign for Israel which hurriedly stressed on negotiating with France to gain access to armaments such as jets and aircrafts, tanks and ammunition stocks.

On domestic level, the deal also invigorated earnest efforts for assuring the technological and economic development of defence industry. The IMI and Soltam hastened production of weapons and ammunitions and RAFAEL convened production of rocketry and warheads. This approach was aimed to gain a level of arms parity vis-à-vis Egypt (Kinsella 1998: 3-7; Hoyt 2007: 76-79). As a result of firm commitment for arms procurement, Israel was involved in joint military effort along with the Britain and France against Egypt over the nationalization of the Suez Canal by President Abdel Gamal Nasser that led to the Suez War of 1956.

³ On 10 September 1962 West Germany took responsibility for death and genocide of Jewish people and damages to their life and property and signed the reparations agreement with Israel and agreed to provide financial reparations to the tune of US\$845 million (Aderet 2013).

The growing alliance with France enhanced the level of industrial and technological cooperation between the two. Israel aped the French arms industry as a favourable model of industrial development (Lifshitz 2010: 267). France was keenly interested in the level of qualitative stress maintained by the Israeli industry especially in the area of aeronautics and missile development. It also sought an ally that could redress its commitment for development and maintenance of high technological standard.

In the field of defence as well as civil aviation, Israel sought French expertise and this was a driving force in harnessing its indigenous defence industry. French support promoted the expansion of hardware potential of IAI and received approval in 1957 for the licensed production of a modified version of Fouga Magister trainer aircraft. As a result, between 1956 and 1967, the defence industry expanded its infrastructure for maintenance and repair services as well as upgrading and production through license of French armaments. Israel's battle experience during the Suez War taught the need to hone efficacy through rapid victory based on mobility, armoured assault and air superiority (Crosbie 1974: 77-97). These needs could be filled through large and long-term capability through procurement of tanks and aircrafts. Although Israel did not have technological and financial resources to produce them indigenously, local modifications and upgrades were useful in later periods by infusing modification of older weapons which were brought from France and other countries.

At the same time, French help was critical for Israel's missile defence and development programmes as it provided solid fuel rocket motors used in number of missiles. RAFAEL channelized its research on missile technology and large number of missiles was developed such as the Gabriel sea-to-sea missiles, Shafir air-to-air missiles, the Luz air-to-surface missiles, and the Shavit/ Jericho sea-to-sea missiles (Hoyt 2007: 82). Learning from the Suez War Tadiran initiated development and updating of communication and control systems for the IDF. Israel's tiny navy was developed and updated through French help. As a consequence of intensive efforts, the total number of workforce in the defence industrial bases had increased from 5,000 in 1950s to 15,000 in 1960s (Dvir and Tishler NA: 196).

In indigenous technology, the arms industry developed inertial guidance systems which were used in the development of Gabriel missile and other systems in the later period. While employing French technology, indigenous means for arms production was focused depending on specific needs of weapons. The industry was successfully overhauling engines that were provided by France and Britain. Israeli defence infrastructure became equipped in overhauling Sherman and Centurion tanks and aircrafts such as Mirage III and thereby extending their service life. Centurion tanks were modified by replacing the engines and 20 pounder guns with NATO standard 105 mm guns and Sherman tanks were modified to high velocity 75 mm guns and later with 105 mm guns. Mirage III was upgraded to improve wings strength, higher ordnance capability and the installation of a domestically produced electronics system (Hoyt 2007: 81). Besides, Israel entered the export market on a limited level through sale of locally produced spare parts, engine overhauls and small arms. By mid-1960s, Israeli military industry reached close to self-sufficiency in small arms such as Uzi submachine gun but remained vulnerable to debates and questioning from the political and defence elites (*ibid*).

On the one hand, the IDF leadership advocated a policy of imports and foreign purchases to meet its defence requirements. It emphasized that foreign purchases could lower the expense on producing weapons, has faster and shorter delivery schedule and has been well tested and proven. It saw domestic production as expensive which has burdening effect on the economy and took a longer duration for manufacturing. Domestic weapons also lose competitive edge due to lack of actual ground testing. Political elites in Defence Ministry on the other hand realised the shortcomings of overt dependence on foreign powers which could choke the arms procurement process due to their vested interests and changing global and regional political and security scenario (Hoyt 2007: 76-79; Klieman and Pedatzur 1991: 71-72). The arms choking as a result of arms embargo imposed by the Tripartite Agreement had caused much harm in the past to Israel's security in general and arms procurement process in particular. Politicians and civilian officials therefore insisted on achieving arms independence although it might cost a price in terms of financial constraints and longer duration for production. Additionally, the debate surmounted in the political sphere too in which the breakaway Rafi party stressed on domestic production whereas Mapai party highlighted on the need to address Israel's security needs through imports.

Nevertheless the infusion of local technology with French military and technological aid had created a favourable condition for Israel's security and a level of qualitative superiority was

ascertained. The government had stressed on defence spending and from 1958 to 1967 defence expenditure increased at an annual rate of 15 percent. Industrial investment also increased from 109.6 million Israeli Shekels in 1956 to 527.7 million Israeli Shekels in 1964 in which the growth of defence industries was twice the growth of other industrial sectors (Dvir and Tishler NA : 196; Hoyt 2007: 76-79). **Table 3.1** provides an account of Israel's military expenditure and arms imports from 1963 to 1967.

Until 1967 arms industry's development led an extensive military-industrial infrastructure for research and development and limited major weapons systems. Stress was historically focused on qualitative superiority which groomed sophistication in its up gradation procedure and in the production of new weapons. By 1966 Israel had gained relative independence in production of small and light weapons and capability to modify existing weapons due to the strong level of political support, rational and focused economic investment and dedicated and highly sophisticated R & D programmes.

Table 3.1: Israel's military expenditures and arms imports, 1963-1967

Year	Defence expenditures (millions of constant US\$ 2007 rates)	Defence expenditures (millions of \$1972 rates)	Defence expenditures as percentage of GNP	Arms imports (millions of constant US\$ 2007 rates)	Arms imports (millions of constant US\$ 1972 rates)
1963	215.67	285.59	8.58	20.0	27.3
1964	288.67	362.12	9.91	69.0	92.6
1965	312.33	357.30	8.96	46.0	60.6
1966	408.00	429.01	10.64	37.0	47.4
1967	635.86	672.12	16.32	23.0	28.6

Source: ACDA, World Military Expenditures and arms trade, 1963-1973, Hoyt 2007: 84

Growth in Defence industry since 1967

The June 1967 war and its consequences have had a long-term effect in the nature of the Israeli arms industry. The Israeli occupation of Sinai Peninsula, Golan Heights, West Bank and the Gaza Strip resulted in France imposing an arms embargo. The gradual deterioration in relations between Israel and France showed signs since mid-1960s but finally halted after 1967 war (the US Congress Global Arms Trade 1991: 94). This was followed by embargo executed by other European states which shrunk its arms procurement options. Israel which had already paid US\$70 million for purchase of 50 Mirage V planes from France was refused delivery and France only agreed to deliver spare parts for existing Mirage III aircraft until 1969. In 1966 Britain had promised to supply new Chieftain main battle tanks with an option for licensed production. Following the June war, Britain cancelled the deal (Lifshitz 2010: 266-267; Hoyt 2007: 85). The abrupt termination of military relations with European states created a new atmosphere of hostility and arms procurement underwent a rethinking.

As the dependence on imported weapons suffered, Israel was in dire need for a new source of supply. At this stage, the US commenced on a limited supply of essential weapons but the US

was seen with suspicion as it used arms aid as a mean to intrude and influence the conflict in the region. Additionally, the US was hesitant to provide latest technology and instead insisted on supplying older versions of weaponry. For example, in terms of tanks and aircrafts, the US was willing to supply M-48 tanks and A-4 aircrafts instead of the more sophisticated M-60 tanks and F-4E Phantom II multi-purpose fighter aircrafts (Hoyt 2007: 85; Steinberg 1986: 163-166). The US sought and demanded control and right of supervision over every arms manufacturing site and defence institutions engaged in research, development and manufacture as well as civilian research institutions. The defence relationship with the US posed a threat to Israel's political independence and long-term military industrial self-sufficiency.

Economic considerations played a major role in the industrialisation process of the arms industry. Due to heightened demand in upgraded and technologically superior armaments by the IDF, a large amount of financial resources was channelled towards the arms industry. The availability of expanded defence budgets had positive impact of defence companies to expand technologically and produce better quality of weapons (Dvir and Tishler NA: 195-198; Peled 2001: 5-9). Due to the French help before 1967, Israel had attained development capability that could be carried over into production. Earlier, the defence infrastructure focussed mostly on maintenance, repair, upgrades, modifications and licensed production but due to changed circumstances, it indulged in indigenous design and production of major weapons systems.

Naftali Blumenthal has noted seven factors that facilitated the state's industrial focus on the domestic arms industry. First was the unilateral French embargo following Israel's occupation of Arab and Palestinian territories during the war. Secondly, the years preceding the war, that is, 1965 to 1967 was a period of economic recession and unemployment which ended after the war leading to economic expansion. Thirdly, capturing of territories from Egypt, Jordan and Syria led to soaring manpower that entered the national labour market which participated largely in labour-intensive industries. This allowed well-skilled labour to participate in sophisticated defence companies. Fourthly, post-1967 period witnessed reduction in inflation rates. Fifthly, although the nature of military relations between Israel and the US remained non-reliable, there was improvement in the ties that expanded the technological and financial facilities in the form of economic aid which had a positive impact on the arms industry. Sixthly, the economic situation in the international scenario was stable and prosperous. And seventhly, the optimistic national emotion after the victory forged a positive collective consciousness for strategic self-sufficiency and national production of defence equipments (Klieman and Pedatzur 1991: 76).

Thus, the national political, strategic and economic climate was favourable towards the development of domestic arms industry.

During 1967 and 1973, there was hike in the level of expenditures and investment and over all priority was assigned to defence-industrial sector of the economy. From 1967 to 1972, investment in defence R&D witnessed a hike of 300 percent and as compared to 1967 investment in defence sector increased by 2.5 times in 1968 and 3.5 times in 1972. Between 1968 and 1974, one-third of investment was committed to production of metals and electronics. The enhancement in these two sectors led to an increase in all non--diamond industrial exports from 15 percent in 1967 to 38 percent in 1980 and the combined growth was 13 percent per year. In terms of employment in defence industry, the total number of personnel grew at the rate of 2.5 times from 14,000 in 1966 to 34,000 in 1972. As a result, the proportion of employees working in the defence industrial sector which was less than 10 percent in 1966-1967 increased to 19 percent in 1973. The defence companies grew at an annual rate of around 9.5 percent from 1969 to 1973. During 1966 and 1973, defence industrial growth increased to four times than other industrial growth and defence industrial growth at US\$500 million soared to five-fold growth in 1973. The IDF's acquisitions from the domestic defence companies increased in real terms at 86 percent from 1966 to 1968 (Hoyt 2007: 83; Klieman and Pedatzur 1991: 76). It was also during this period that private firms were encouraged to engage in defence sector and were allowed bid for defence contracts.

This period was marked by independent design and production of sophisticated complete weapons systems. The emphasis on indigenous production was heightened due to cancellation of Mirage V fighter aircrafts by France and Chieftain tanks by Britain. The proposal to design and produce Merkava tanks was the consequence of the British refusal to supply Chieftain tanks as per the agreement in 1966. The production responsibility for its development was carried out through domestic infrastructure and MASHA, the maintenance and repair workshop of the IDF in 1969 (Hoyt 2007: 85). The design is largely based on the British Chieftain tanks combined with 70 modifications to suit Israel's context including the incorporation of a 900 horsepower frontal engine to enhance mobility and crew protection (*ibid*).

Aircraft sector received major attention for domestic innovation and production (Steinberg 1983: 283). Israeli version of the Mirage V known as the Neshar was produced using French parts in 1969. After success with Neshar aircraft, the Kfir fighter was developed which could supplement and replace imported systems. Kfir fighter was produced domestically in 1973 by

integrating French and Israeli Mirage technology and the US General Electric J-79-17 jet engines. A lightweight transporter, Arava and Commodore Jet 1123 were also developed. In the area of ballistic missiles, an air-to-air missile, Shafrir 2 was produced by Rafael and Gabriel sea-to-sea missile was produced by IAI. Combat missile boat Saar missile carrier was produced during this period by Israel Shipyards. In terms of ammunitions, due to high consumption rate by the IDF, 35 percent of ammunitions were imported from external sources while rest were produced domestically (Steinberg 1983: 282; Klieman and Pedatzur 1991: 77). The overall development in weapons systems in the sphere of battle tanks, ballistic missiles, combat aircrafts and missile boats had positively enriched the technological capabilities of the IDF.

Besides production of new systems, Israel developed systemic mechanism aimed at maintenance and repair of armaments and equipments during this period (Hoyt 2007: 83-88). In the October 1973 war, defence industry nurtured repair and maintenance capability that was instrumental in war execution process. During the war, 900 Israeli tanks were destroyed which were quickly restored and made ready for combat. Within two days of the 1973 War, 75 percent of tanks in Golan Heights and Sinai sector were destroyed out of which 80 percent were repaired successfully and were returned for combat operation. The agile repair and maintenance effort played an important role in reducing losses. Indeed during the 1973 war, only 100 tanks were completely destroyed. The indigenisation of the defence industry prompted Israel to produce 90 percent of necessary requirements for small and light arms and 70-80 percent of required electronics (*ibid*). **Table 3.2** highlights on Israel's military expenditures and arms imports from 1967 to 1973.

Table 3.2: Israel's military expenditures and arms imports, 1967-73

Year	Defence expenditures (millions of constant US\$ 2007 rates)	Defence expenditures (millions of constant \$1972 rates)	Defence expenditures as percentage of GNP	Arms imports (millions of constant US\$ 2007 rates)	Arms imports (millions of constant US\$ 1972 rates)
1967	635.86	672.12	16.32	23.0	28.6
1968	709.43	837.85	17.70	55.0	65.7
1969	964.00	1,135.94	21.35	163.0	185.8
1970	1,382.29	1,484.03	25.92	232.0	250.7
1971	1,463.85	1,491.25	23.75	257.0	265.7
1972	1,490.95	1,490.95	21.62	214.0	214.0
1973	3,953.10	3,255.72	45.41	1,717.0	1,625.9

Source: ACDA, World Military Expenditures and arms trade, 1963-1973, Hoyt 2007: 84.

During this period Israel entered the arms export market and became a significant supplier of military electronics, communication equipments and missile technology. The demand for Israeli defence equipments in the international arms market increased from US\$14 million in 1967 to US\$200 million in 1974 and to burgeoning amount of US\$1.7 billion in 1989. The amount of economic output from defence sector in 1974 was US\$500 million that increased to US\$1.4 billion in 1980 and US\$2.25 billion in 1984. In terms of employment, there was a twelve-fold increase at the rate of 8 percent in workforce from 1955 when it employed 3.7 percent of the total workforce to 1985 when it employed 20 percent of the workforce (Klieman and Pedatzur 1991: 78).

In terms of arms procurement decision-making process, the IDF gained a significant share of influence due to newly achieved strategic depth after occupation of Arab territories which led to underestimation of threat perception and it harnessed programmes that are viable for long-term security goals. The IDF emphasised on procuring arms from domestic market. In fact during

1967 and 1972, 86 percent of the arms procurement was acquisitioned from domestic sources (*ibid*).

The debate on whether to insist on domestic production or to rely on foreign sources that started since 1955 continued to polarise the military and political elites during this period. On one hand, former chief-of-army staff Yitzhak Rabin highlighted the insecurity Israel faces, due to volatile security situation which was aggravated by the absence of superpower support. Military elites led by Rabin impressed on forging stronger relations with external powers especially the US as procurement from external sources offered guaranteed delivery schedules, lower prices and experience in combat (Klieman and Pedatzur 1991: 73-75; Peled 2001: 4-7; Steinberg 1986: 163-166). This bloc suggested that development of Israeli defence infrastructure should focus on maintenance and modification of existing systems and discouraged projects that have high unit costs.

The political circle led by Shimon Peres, favoured the doctrine of arms independence and stressed on the need to nurture domestic industrial infrastructure for the production of major systems. He suggested that domestic industry that has already gained considerable position which must be utilised optimally to produce major weapons systems as well as small arms and ammunitions. Peres also favoured diversification of supply with European states such as Britain, France and West Germany rather than establishing single supplier relationship only with the US (Hoyt 2007: 95-97).

There was a polarisation among the political and military elites over the future direction of the defence industry. While there is pertinent need to tackle with immediate conflict that arose through means of short-term preparedness and immediate battle readiness, the newly gained strategic depth gave Israeli policy makers the luxury to indulge in questions over its long-term security strategies and goals. These debates over Israel's short-term and long-term goals along with opting for favourable route for regular supply largely dominated the debates during this period (Klieman and Pedatzur 1991: 79-82). The rapid expansion and success in technologically-driven growth in defence industry strengthened the doctrine of arms independence. Enthusiasm towards achieving strategic self-sufficiency overshadowed serious thinking on economic and strategic planning for the future.

The events since the June war brought a change in Israel's assumptions with regard to regional military balance as well as military priorities. As a result of the military defeat suffered by the Arab armies, the Israeli policy makers assumed about the unlikely occurrence of an Arab attack in the near future and this led a shift in defence priorities from preparedness to preparation. Besides the lessening threat, embargo and cancellation of contracts by France and other European producers and the conditional financial support and military aid provided by the US created an unreliable environment for procurement of armaments (Steinberg 1983: 281-82). Therefore, in the post-1967 period, the prioritisation of defence needs focussed upon incorporating major weapons platforms besides maintaining existing capabilities for maintenance, modernisation and expansion of production of light arms. The military industrial policy after 1967 therefore witnessed the pursuit of self-sufficiency in major weapons systems.

In the 1973 October war the Arab states sought to dislodge the status quo and reclaim territories lost during the June war (Baxter 1994: 1-5). The sudden war came as a shock to Israel's strategic planning and had severe repercussions and reflected the drawbacks in terms of military preparedness, offensive capability and strategic doctrine. The degree of mobilisation and logistical capabilities were overestimated and were tested during the war. Israel faced critical shortages in terms of stockpiles of ammunitions and spare parts and there was inadequate reserve of tank transporters. Due to this, reserve armoured units had to carry additional task which multiplied the problems of maintenance and repair. The distribution mechanism for ammunitions was not at par and emphasis was not laid on the optimal usage of artillery units which were critical for cover fire and support to the ground unit. It has been estimated that due to poor planning only 40 percent of tank ammunition reached the war fronts on time. As a consequence of the war Israel approximately lost the GDP for an entire year (Hoyt 2007: 94-97). Israeli policy makers had underestimated the capabilities of the Arab armies which displayed a formidable challenge to the superior Israel army and equipments. Learning from past experiences, Arab armies introduced new tactics based on technologies such as anti-tank guided missiles (ATGMs) and surface-to-air missiles (SAMs; Steinberg 1983: 282-283; Steinberg 1986: 164-165).

The October war had displayed Israel's shortcomings and shook its confidence. The critical shortages, poor planning and growing Arab military and technological capabilities led to rethinking in its arms acquisition approach. The loss of life and its impact on the economy had a serious effect. At the same time, the rising price of oil had boosted and enriched economies of

several Arab states which enabled many Arab states to purchase sophisticated armaments from external sources which were qualitatively at par with Israeli arms and also led to a quantitative expansion of their armed forces.

In response to these developments, the threat of impending danger in future and overall transforming political-economic realities, the arms procurement policy in Israel was revitalised to incorporate these specific grievances (the US Congress Global Arms Trade 1991: 94-95). Therefore, after 1973, Israel witnessed a further extension and expansion of procurement efforts by ensuring larger amount of national resources to further research and development and an increase the scale and quantities of armaments. The goal to obtain a level of strategic self-sufficiency in armaments was seen possible. The annual expenditures on defence soared by 12 percent in constant dollars and increased four-fold as percentage in GNP. The policy makers had determined to produce at least 40 percent of the arms production through domestic industry (Sadeh 2001: 64-77; Hoyt 2007: 96-97).

Large scale efforts to achieve technology to ensure quick modifications suitable to Israel's security context was undertaken and the mechanisms to ensure and adapt changes corollary to IDF's transitioning demand was impressed. The defence-industrial infrastructure was expanded to cater to growing need for armaments feasible both in terms of quality as well as quantity (Brauer 1998: 4-6) In the past, Israel has secured the qualitative advantage in armaments as compared to the Arab states but the changing realities in the wake of import of sophisticated arms by Arab states reoriented the policy makers to address the need to ensure quantitative edge wherever possible. To tackle the need to expand domestic industrial base and fill the growing demand for armaments, between 1974 and 1976 Israel committed US\$400 million to defence R&D. Besides armaments, the number of active soldiers in the IDF witnessed 100 percent increase and the number of reserve force increased from 225,000 to 322,000 during the 1971 and 1981 (Klieman and Pedatzur: 1991: 94-96). Table 3.3 provides account of Israel's military expenditures and arms imports from 1974 to 1982.

Table 3.3: Israel's military expenditures and arms imports, 1974-82

Year	Defence expenditures (millions of constant US\$ 2007 rates)	Defence expenditures (millions of constant \$1981 rates)	Defence expenditures as percentage of GNP	Arms imports (millions of constant US\$ 2007 rates)	Arms imports (millions of constant US\$ 1981 rates)
1974	3,036	5,140	28.6	950	1,608
1975	3,780	5,869	31.9	725	1,125
1976	4,083	5,999	32.7	975	1,432
1977	4,103	5,694	30.0	1,100	1,526
1978	3,707	4,789	24.3	900	1,162
1979	5,232	6,232	30.8	490	583
1980	5,424	5,930	29.3	825	901
1981	4,374E	4,374E	20.3	1,100	1,100
1982	5,838E	5,507E	25.5	1,000	943

Source: ACDA, World Military Expenditures and arms transfer, 1972-1982, Hoyt 2007: 92.

E = Estimate

In the 1970s, Israel realised the economic as well as political benefits of arms exports which were useful to the economy and enriched the foreign exchange reserves. At the same time, exports were beneficial to maintain full production levels and provided important source of funding for defence R&D. Exports provided assurance of the availability of critical equipments and weapons in the event of a crisis. By 1984, arms exports received a high priority in Israel defence policy. But over reliance on exports made it prone to fluctuations in international arms market and endangered the secrecy of its defence equipments (Hoyt 2007: 92-97). The detailed analysis of the political and economic repercussions of arms exports would be dealt in detail in the later part of this chapter but it can be argued that exports in general had mixed results upon Israel's economy and defence policy.

By late 1970s, Israel was capable of producing most of its the requirements in small and light arms and mortars. The Merkava tank, Kfir fighter and Reshef class missile boat were operationalised during this period. In the area of electronics, Israel achieved remarkable success and electronic equipments used in radar, communications, jamming equipments, electronic warfare, missile guidance systems and weapons platforms are seen as essential to maintain qualitative superiority in warfare and extend the lifespan of existing equipments (Sadeh 2001: 64-77). Investments in electronics and metals production were stressed and one-third of defence expenditures from 1968 to 1974 were assigned to electronics and metal industries. The funding devoted to electronics manufacturing increased at the rate of 2.5 times from 1967 to 1968 and 3.5 times from 1967 to 1972. Besides electronics, due to the close relationship between the military establishment and domestic arms industry, areas such as communications, command and control, tactical intelligence improved (Steinberg 1986: 165-166; Hoyt 2007: 93-95). After 1983, due to political and economic interests that interfered with the defence programmes, there was discrepancy in the cooperative relationship between Israel's security requirements and military industrial programmes.

As a consequence of continuous political insistence on Israeli superiority in aerospace research and thereby upholding the importance of IAI by providing new projects catered their economic relevance and guarantee employment. Instead of focusing on overall technological development in terms of reconnaissance, long-term strike, and electronic warfare capabilities, improvements in guidance and munitions technology, Israel devoted substantial amount of defence funding and R&D in the aerospace sector (Steinberg 1986: 165-166; Hoyt 2007: 93-95; Sadeh 2001: 64-77). The intense prioritisation on aerospace sector therefore diverted resources from other areas of military infrastructure development. In this direction, plans to manufacture Lavi fighter aircraft were incorporated into the US financial assistance and technical expertise. The stress on Lavi project limited investment and research in other areas and increased Israeli dependence on the US for both technology and funding (Zakheim 1996: 1-15).

The defence-industrial infrastructure gradually faced direct repercussions of economic gloom of the national economy that surfaced since 1970s and a sharp slowdown was witnessed in the growth rate of the Gross National Product. During 1951-1973, the annual average GNP reduced from 6 percent to 1 percent. During 1975-1979, the rate of inflation increased annually at 45 percent and peaked at 450 percent in 1984. Due to the severe economic stress, defence spending faced a cut down of US\$258 million in 1984. In early 1980s while 50 percent of Israel's

military expenditure was spent on production and R&D, the amount was reduced to 35 percent in 1989. The R&D spending suffered heavy cutbacks by 40 percent and investment in domestic industry shrunk by two third IDF (Hoyt 2007: 93-95). Even after the Lavi project was halted, US\$5.5 billion was assigned to new projects out of which 42 percent was dedicated on standard operating cost of the IDF (*ibid*).

At the same time, following the cancellation of the Lavi Project on 30 August 1987, a wave of cancellations on work orders and subcontracts took place leading to massive loss for local defence firms (Zakheim 1996: 1-15). Economic depression was accentuated by the implementation of the policy of fixed exchange rates for dollar in 1985 that had negative effects on the profit margin for arms products and domestic arms companies suffering losses. With regard to employment, during the 1980s the defence industry faced lot of job losses. In 1986, the size of the total workforce employed in defence companies was 22,500 and went down to 16,600 in 1989. The IAI faced 25 percent drop in workforce and 20 percent in the IMI while Tadiran lay off approximately 1,000 workers (Klieman and Pedatzur 1991: 80-81; Hoyt 2007: 91-97).

Israel's invasion in Lebanon in 1982 and the first intifada which broke out in December 1987 also drained its economic resources and the defence budget. The expenses required meeting active and reserved force as well as maintenance and operation cost of the available stock pile of weapons further strained spending on defence expenditures (*ibid*). The cost of maintaining the large structure that was built after 1973 heightened the economic cost which stressed local procurement and R&D. The burgeoning amount was spent on meeting the salary requirements of the defence staff and by 1984 only 20 to 30 percent of the defence budget was left for defence-industrial infrastructure and local procurement (Hoyt 2007: 97; Dvir and Tishler NA: 196).

Due to the economic turmoil in the early 1980s Israel became increasingly depended on the US for its defence needs and bought a variety of equipments from the US that were earlier produced by the domestic industry. The level of defence-industrial cooperation witnessed integration during this period. While in 1970s the US supplied Israel with sophisticated weapons to gain political leverage and to enhance its prominence in the region, the nature of arms supply in 1980s ceased to be one-sided. There was a large number of technology-sharing between the two. The shifting nature of arms transaction increased Israeli dependence on the US supplies

and hence its ability to create, field and export qualitatively superior weapons faced severe constraints (Klieman and Pedatzur 1991: 167-168; Hoyt 2007: 97-98)

To overcome the declining demand in the domestic market, Israel insisted on maintaining its position on exports. Under such direction the share of exports in the state's total defence production has only increased as compared to the share its domestic production. In 1988, the ratio of exports was 70 percent and for domestic procurement was 30 percent (Klieman 1998: 112-116). In the sphere of arms exports, the fluctuation in international market added to economic vulnerability and in the late 1980s and in 1990s, several policies were highlighted to deal with new realities (*ibid*). It was forced to address changing arms needs to cater to newer threats and situations and prevail its relatively unique position in international arms market.

Israel's export-oriented defence industrial growth faced deep obstacles due to the changing nature of international arms market as the market transformed into a highly competitive buyers' market from an oligopolistic sellers' market. In response, there was a change in both supply side as well as demand side of defence equipment. The higher level of export fluctuation and shrinking size of the market resulted due to waning of arms demand in the 1980s and enhanced arms competition within the leading arms producers. The established and traditional arms producers are the US, Russia, China, Germany, Switzerland, Sweden, France and Britain. While France and Britain had liberal arms supply regulations, others had liberalised and commercialised arms exports policies during the period of intense competition and widen their respective market opportunities. A large number of developing countries became new arms producers and entered the market and countries such as Brazil had established defence industrial programme which developed the arms industry in size, diversity and sophistication (Klieman 1998: 113-116; Klieman and Tishler 1991: 79-80). The military expenditure of the US between 1990-1991 remained US\$ 250 million to US\$ 350 million approximately. Between 1992 and 1999, Russia's total military expenditure remained US\$ 22 million to US\$ 47 million approximately. France also maintained US\$ 47 million to US\$ 52 million approximately during this period. Britain also maintained expenditure between US\$ 31 million to US\$ 41 million. Brazil had hiked the military expenditure at US\$ 6.3 million in 1990 to US\$ 14.2 million in 1999 approximately. China had also increased expenditure from US\$ 10.8 million in 1990 to US\$ 18.4 million in 1999 (SIPRI yearbook 2000: 270-275). Whereas on the other hand, as **Table 3.6** has showcased, Israel's expenditure remained at meagre US\$ 7.5 million to US\$ 8.3

million during 1990s. These developments led to shrinking in Israel's space in the global market and reduced its share.

It had adversely affected Israel's export-oriented arms industry. In the 1970s and 1980s Israel has opened its arsenal for exports. As a result of the new conditions that brought transformation in the nature of arms transactions along with shrinking space of arms trade, Israel's arms industry faced the brunt that led to its decline. Israel had also lacked competitive edge financially as it could not facilitate long-term financing and countertrade options to support its defence exports. Because of its political isolation and secrecy requirements on defence technology, Israel could not participate openly in joint ventures and technology transfer (the US Congress Global Arms Trade 1991: 88-90; Hoyt 2007: 197). At the same time, over dependence upon exports also harmed the Israeli defence firms. Concentration of export strategy on a particular market exposed them to uncertainties due to political changes or economic turmoil in the arms importing states. In case of Iran, prior to 1979 Israel has significant share of its which suddenly halted as a result of the Islamic Revolution (Klieman 1998: 116). Therefore, the defence production units that are devoted to manufacturing arms for exports are bound to incur losses.

Since the 1990s, despite the obstacles, Israel has pursued certain policy parameters to maintain its viability and its arms exports have become politically consciousness and tried to correct the mistakes made in the last two decades. As a consequence of Israel's relative political isolation and in order to foster foreign and trade relations earlier it opted for indiscriminate deals in arms with states thereby causing diplomatic embarrassments and financial setbacks as a result of political instability in receiving states (*ibid*). Therefore, Israel has taken steps to carefully pursue political and trade relationship and more prudent in choice of recipients to avoid commercial vulnerabilities. Related to this, by 1990s, the political isolation suffered by Israel was overcome by the entry of countries such as China and India as new markets for commercial engagements including arms.

At the same time, attempts were made to lessen the share of arms trade in the total industrial trade thereby reducing the level of risk associated with arms dealings with other countries. In fact since the 1990s, there were encouraging signs regarding increase in non-defence trade vis-à-vis the defence exports **Table 3.4** provides data on high stress on Israel's defence exports and percentage share in defence exports in non-diamond industrial exports between 1974 and 1984.

This development has reduced excessive dependence of arms exports which continues to remain highly unstable item in international commercial transactions.

Table 3.4: Israel's defence exports, 1974-84

Year	Exports in millions of constant US\$ 2007 rates	Percentage share of defence exports in non-diamond industrial exports
1974	96	10
1976	322	26
1978	554	28
1981	875	21
1984	1,400	30

Source: Hoyt 2007: 93

It is important to note that Israel has maintained its leverage due to its traditional policy of technology-intensive defence manufacturing. In earlier years, especially during 1948-1967, it pursued a policy of dependence on external factors such as Czechoslovakia for a time being, largely on France and on a limited scale with the US. This approach has weakened Israel's strategic and political autonomy. In the post-1967 period, the policy makers were insistent on gaining a level of relative self-sufficiency. This period witnessed the production of major indigenous weapons systems such as Kfir aircraft, Merkava tanks etc. The policy of independence became increasingly unsustainable due to changes in domestic security context such as Camp David Agreement in 1979 which considerably reduced Israel's security threat and reduced demand domestically and due to economic recession, susceptibility of arms exports due to lack of control over external events etc. **Table 3.5** provides data on Israel's military expenditures and arms imports from 1981 to 1991.

Table: 3.5 Israel's Military expenditures and arms imports, 1981-1991

Year	Defence expenditures (millions of constant US\$ 2007 rates)	Defence expenditures (millions of constant \$1991 rates)	Defence expenditures as percentage of GNP	Arms imports (millions of constant US\$ 2007 rates)	Arms imports (millions of constant US\$ 1991 rates)
1981	6,514	9,725	22.9	1,200	1,791
1982	6,359	8,939	20.7	925	1,300
1983	7,322	9,890	22.1	500	675
1984	8,375	10,830	24.5	775	1,002
1985	7,519	9,380	20.4	1,000	1,248
1986	6,918	8,404	17.4	500	607
1987	6,308	7,428	14.3	1,800	2,120
1988	6,110	6,928	13.0	1,200	1,361
1989	6,245	6,775	12.6	1,100	1,193
1990	6,940	7,218	12.6	460	478
1991	4,992	4,992	8.1	460	460

Source: ACDA, World Military Expenditures and Arms Transfers, 1991-92, Hoyt 2007: 96.

Since 1990s, the defence production policy was however focussed on the policy of interdependence in which Israel made careful attempt to engage in joint financing of defence projects, co-production and collaborative project development at different stages from design to assembly (Klieman and Pedatzur 1991: 176-190). It made efforts to share military research, engage in technology transfer and data exchanges with complimentary partners such as the US. Another aspect of the policy of interdependence was dependence of external factors such as the US for major and expensive weapons systems on one hand while concentrating on the domestic development of niche and sophisticated technologies.

One positive change that happened in international arms market was that rather than focusing on procurement of new weapons systems that heightens the risks involved and increases the level of cost, states were more interested in upgrading existing platforms and purchase of defence technology through licensed production and business arrangements (Hoyt 2007: 100-102). States started to engage in countertrade arrangements such as barter and offset provisions, developing provision of long-term financial support, bilateral, multilateral and joint ventures for production and development of defence products and lower degree of product differentiation and diminishing alteration in basic platform design and growing customization through modification of software and sub systems (Klieman 1998: 118-121).

This is where Israel's arms industry has come to be useful. As a result of technology- induced defence industrial production, it has been able to tap the needs of changing arms market. Rather than focusing on major weapons systems, it has devoted its production strategy in innovations in modification and modernisation capabilities through indigenous designs for upgrading and retrofit data packages to improve and extend the shelf life and combat effectiveness of ageing and obsolete weapons systems (Brauer 1998: 4-6; Dvir and Pedatzur NA: 197-200). It has also focused on complex sub-systems and specialised components, smart weapons such as electronics, computers, software devices for coding and deciphering, lasers and infra red sensors, night vision optics, C3I communications equipments, remote sensing satellites, avionics etc. It has gained significant advancement in missile and drones and has insisted on maintaining technological autonomy to avoid compromises in the availability of weapons due to arms embargoes. The stress on niche technology has been a hallmark on Israeli defence production thinking which has advantages in terms of lowering of costs in defence manufacturing and providing the IDF with latest state of art technology (Klieman 1998: 117-119).

Table 3.6: Israel's military expenditures and share in GDP, 1991-1998

Year	Defence expenditures (millions at constant US\$1995 rates)	Defence expenditures as percentage of GDP
1991	7,533	11.0
1992	7,706	10.5
1993	7,200	9.4
1994	7,250	8.8
1995	7,378	8.5
1996	7,905	8.7
1997	8,010	8.6
1998	8,375	8.7

Source: SIPRI Yearbook, 2000: 275, 281.

The insistence on technological innovation was based on the change in nature of security threat. While earlier due to Israel's traditional qualitative superiority in military training and weapons, it was capable of countering conflicts with Arab states. Militarisation of the region whereby Iraq, Iran, Syria and Egypt acquired large number of ballistic missiles diluted the qualitative advantage it enjoyed earlier (*ibid*). The tensions since the outbreak of the First Intifada required newer strategies. In terms of administrative management measures were taken to increase efficiency through comprehensive restructuring. It meant closing of some plants and cutbacks in employment to make the industries lean and more productive. In the government controlled companies that occupy the major chunk of defence production, massive laying off took place. The workforce in these companies reduced from 43,700 in mid-1980s to 23,000 in 1997 (Dvir and Tishler NA: 102-105; Lifshitz 2010: 271).

In the domestic context, policy changes in terms of consensual decision-making, greater accountability, and coordination in the internal chain among the Defence Ministry, Finance Ministry, defence establishment and arms industry had taken place. These led to a greater accountability in defence production policy for both domestic consumption and external market. The management strategies were directed to prioritise profitability and cash considerations which reaped economic benefits thereby helping the industry to expand in new areas and upper

level defence design and production. The government controlled companies undertook joint ventures with private firms and external players.

The privately owned firms pursued the policy of local consolidation, mergers and acquisitions. For example Elbit Systems became the second largest company by acquiring El-Op, Electro-Optic Systems, Tadiran Communications, Elisra, Cyclon Aviation Products and other small companies (Lifshitz 2010: 272). The consolidation and restructuring process have raised the industrial capabilities and marketing opportunities domestically and globally. As a result four big companies, namely, IAI, Rafael, IMI and Elbit Systems posted annual revenues of over US\$1.5 billion each in 2012 (*ibid*; the US Congress Global Arms Trade 1991: 95-100). The overall focus in defence industrial space has been on niche defence products such as sub-systems in avionics, radar, electro-optics, electronics, cyber warfare etc. It has maintained a credible position in defence exports.

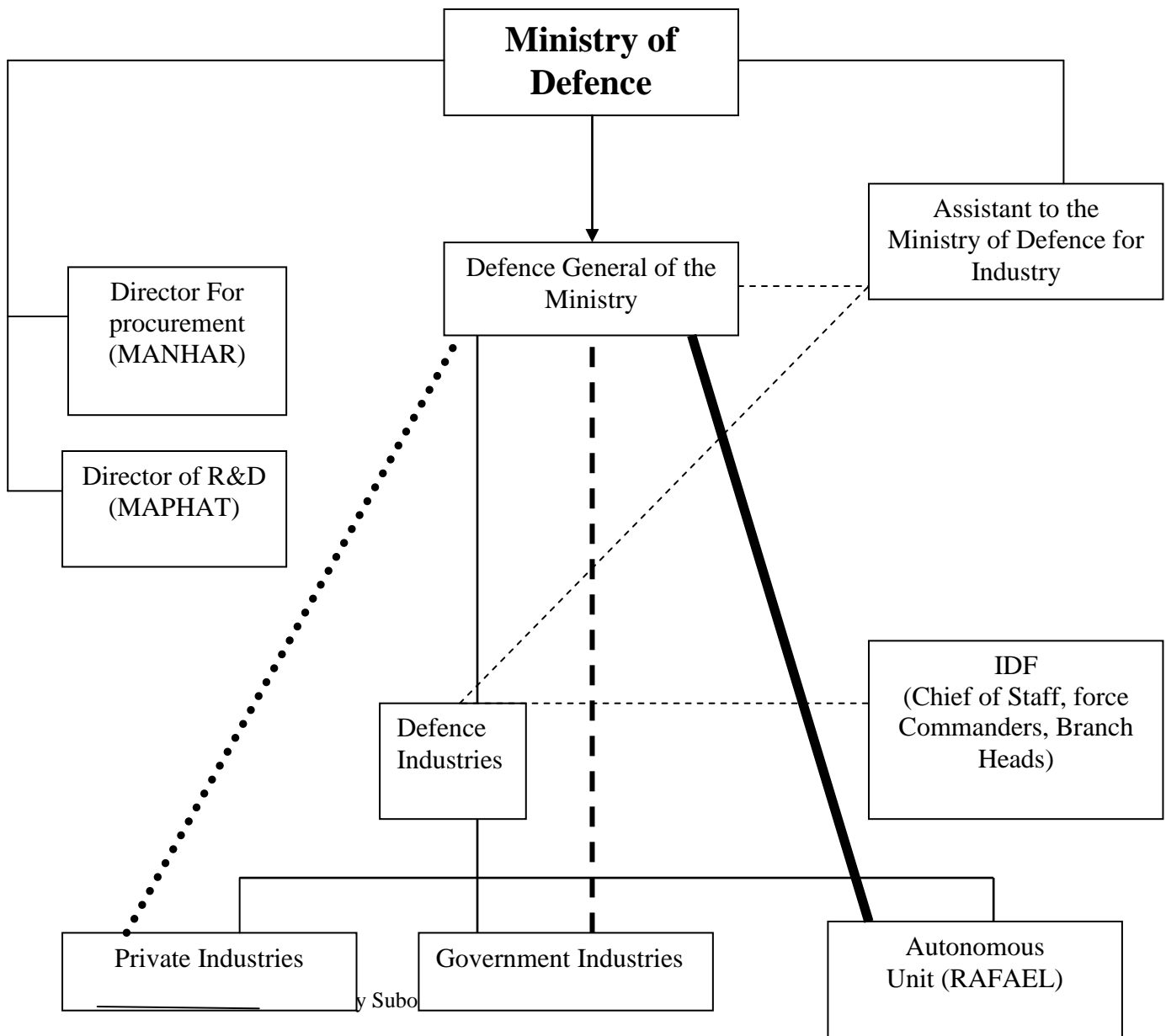
The growth process of Israel's defence industrial production was carried out by the structure that has been built by combination of government and military official and arms companies. The policy framework that has been followed in the industry is a consequence of the overt and covert decision-making process based on security, economy and experience and interactions with external actors. The next section sheds light into the workings and interaction among these factors culminating in the present state of Israel's defence industry.

Major actors and Policy choices

Israel's military industrial complex is composed of a coalition of institutions involved in high level national security policy-making process. The military industrial complex operates within the unique security condition which is perceived as extensive and exhausting, suffering in terms of quantitative disadvantage of manpower and armaments in relation to the neighbouring states while dealing with the dilemma between strategic independence and dependence on external powers in terms of arms procurement. A host of actors, therefore, play a crucial role in partaking decisions with regard to constant increases in defence spending, investment and funding allocation for R&D and production, development of new systems, military manpower, military procurement from local as well as external sources, arms production, intelligence activities, maintaining security system autonomy in military policy making and preventive measures against aggression (Mintz 1984: 107)

The principal actors in Israel's defence industrial complex are the Ministry of Defence (MoD), Israeli Defence Force (IDF), the Intelligence branches, political representatives and primary defence industries. **Fig. 3.1** displays the organisational structure of Israeli Defence Establishment. Furthermore, bodies such as Atomic Energy Commission, veterans groups like IDF Disabled Veterans' Organisations, Border Police, Anti-Terror Unit, Civil Guards, American Israeli Public Affairs Committee (AIPAC) and beneficiaries of arms assignments and contracts like fortifications contractors and arms agents have pertinent role in the complex matrix (Klieman and Pedatzur 1991: 125-136).

Figure: 3.1 Structure of the Israeli Defence Establishment



----- = Reciprocal working relation

———— = Direct Supervision

- - - - = Indirect supervision

..... = Heavy influence **Source:** Klieman and Pedatzur 1991: 108

The defence industry is an integral part of the security imagination of the state and has come into existence as a result of Israel's security situation affected by its history, geography, demography and past and contemporary politics. Another important determinant behind the

growth of the arms industry is the economic impetus. Therefore, the actors affecting Israel's defence industry are products of the complete structure affecting its political existence and security. Its historical socialist foundations gave primacy to the state as the principal source of capital, and primary and largest industries are publically owned., after the June 1967, private sector was incorporated in the structure of the defence industry. The size of Israel's arms industry is huge and as of 2010 there are more than 150 firms that are associated with defence research, development and production (Lifshitz 2010: 267-273). As a result, the defence industry has assumed the role of a powerful interest group affecting government conduct on security requirements as well as export orientation towards securing employment, foreign trade and to generate profits (Mintz 1984: 103-125).

The unique characteristic of the defence industry is the interrelationship among the members in the arms procurement decision-making process. The involvement of the government in the defence industry is due to the state being the owner of some of the most prominent defence industries and its principal consumer. Therefore, the individuals involved in the policy making have overlapping role due to the close ties between the political leadership with many of whom being retired senior officers, the IDF officials and heads of the defence firms (Steinberg 1998: 111-115; the US Congress Global Arms Trade 1991: 95-97). It is not surprising for a military official to pursue political career at a later stage and between 1948 and 1977, one-third of all retired generals pursued their career in politics and especially in the sphere of security such as Minister of Defence, Deputy and Assistant Ministers of Defence, Director General of the Defence Ministry or important positions in arms industries (Klieman and Pedatzur 1991: 125-127). The government is also in control of authorising exports of defence products through a special division called SIBAT. As a result of the direct interrelationship between the defence firms and politico-military circle, the inner functioning of both the entities is affected by each other.

There is a direct relationship among the directors of military industries with officials and politicians in the MoD and senior IDF officials. The heads of many of the defence industrial enterprises are themselves retired veterans from the IDF and these companies are involved in development of weapons systems for the IDF. There are numerous instances of large scale recruitment of officials from defence establishment in the defence companies, especially in government-controlled and state-owned enterprises. Members of the defence industry also join key positions in the MoD (Klieman and Pedatzur 1991: 125-136). As a result of the deep

personal relations, the officials within the defence firms collaborate with officials from IDF and politicians. The overarching role of defence industry in decision-making is ascertained by the political system. Due to the proportional representation form of electoral system, the local pressures to channel contracts and funding to local industries are largely absent. The dominant defence firms are government-controlled or public sector companies. The interrelationship has flourished due to small size of Israel and its economy, common background of military service by all citizens and a small number of technical institutes that allows close and open communication among the military, politicians and executives from the defence companies (Dvir and Tishler NA: 198-199).

There is a visible network of senior IDF officials in the industry as well as the Ministry and a number of corporate executives from the defence firms that have joined the Ministry. But 1948 and 1977, one-third of retired military personals have joined politics (Mintz 1984: 108). As a result of this extensive network, debate has erupted over officials who later become supplier of weapons systems which can produce conflict of interest between supplier and client (Steinberg 1998 a: 108-112). In other words, due to the close ties among the core members of the complex, policy making with regard to arms procurement is affected by defence firms' vested interests and decisions tended to be take that not exclusively based on military, political and economic priorities. In effect, there are possibilities of financial discrepancies, non-transparency, favouritism or creating demand for equipments which necessarily are not required at a given point (*ibid*)

The most prominent members in the decision-making process is played by the government owned defence firms, namely, IAI, IMI, National Weapons Development Authority or RAFAEL and IDF's Main Ordnance Factory (Steinberg 1998 a: 108-112; Mintz 1984: 106-112). The government-controlled industries received the highest priority due to the direct responsibility and control. Defence Minister instructs IDF to purchase weapons systems from the government owned firms to protect the economic status and ascertain security of employment in these enterprises (*ibid*). Between 1967 and 1980, the proportion of employees working in defence sector had increased by two and half times the amount of total workforce (Mintz 1984: 106-112). These purchases have been made from time to time to maintain employment although while not fitting IDF's optimal terms (*ibid*).

The Defence Ministry officials have a direct say in the functioning of the government controlled industries and hence it has to prioritise the requirements. It can generate a conflict of interest

due to the personal involvement with the firms and at the same time, there is a risk of abuse of public trust. The decisions are ideally required to be completely objective (Mintz 1984: 103-112). Due to access to internal documents from the Ministry such as project cost assessments, defence firms especially the government-controlled companies can influence financial and policy decision-making. Therefore, the defence firms are in position of monopoly of information that facilitates in meeting its personal interests and at times supplementing the political and military class with inaccurate and incomplete information and estimates (*ibid*).

Due to broad consensus on security and the impending danger that the state is periodically subjected to, the level of public scrutiny is relatively diluted with regard to the decision-making process as well as the individuals conduct in the defence industrial complex. In fact, defence production and development is generally associated with the intrinsic requirement for national security and is often seen with pride (Klieman and Pedatzur 1991: 125-136). Besides, the involvement of defence industries within the IDF has advantages. The industries have provided important contribution to the security doctrine and combat tactics for the IDF. The military industries have highlighted on specific technical and operational problems that are corrected through changes and designing technically efficient weapons which serves as crucial input during combat operations and overall security. In terms of operational capabilities, the defence firms develop equipments at par with the interest of the armed force and therefore meet critical operational needs of the IDF by providing high quality weapons systems. At the same time, the close relationship between the IDF officials and defence firms has enabled shortening of production time. It has enabled ease of access and has led to cutting of development costs. The close connection has facilitated original solutions in terms of decisions on economically and operationally viable weapons systems that are unique to IDF's requirements being obtained in case of emergency (Dvir and Tishler NA: 199).

There are hindrances in terms of absence of any long-term policy for equipping the IDF and for defence industry preparedness. The division of labour among the firms are distorted which results in duplication in areas of specialisation, establishment of unnecessary and expensive infrastructures and competition among different firms for the small domestic market in which provisions for duplication in financially unfeasible (Hoyt 2007: 97) .

Besides the arms industries, the key members of Israeli defence industrial policy-making process is the MoD that comprised of the IDF and is headed by a civilian Defence Minister who is appointed by the Prime Minister to oversee the affairs of Israeli armed forces and has a large

discretionary powers over the decisions on arms procurement as most of the prominent defence firms are under the direct control of the Ministry. Due to the political and administrative control over arms acquisition policy, the Minister enjoys significant autonomy which is enabled by paucity of involvement by other cabinet members in framing the defence policy and due to the absence of review and control apparatus (Klieman and Pedatzur 1991: 106-119). The dependence of defence firms on Defence Minister and his office for arms procurement enables the Defence Minister to intervene and influence internal corporate policies of the defence companies including the private companies.

The powers of the Defence Minister can be however limited by his inexperience in conduct over military affairs which would force him to rely on IDF's expertise. Due to absence of a coherent and objective body to guide and provide analysis within the Ministry, the Defence Minister has to primarily rely on the evaluations and estimates provided by the IDF to base his decisions (Steinberg 1998 a: 94-102). The IDF which has systematic apparatus for evaluation and analysis serves as an important member of the complex defence policies and provides direct inputs that help the Defence Minister in formulating important security policies. Therefore, the Defence Ministry to a large extent is dependent on the IDF's evaluations and these results in the IDF assuming a de-facto authority over administrative decisions of the Ministry.

Within the IDF, the authority over arms procurement policies rests prominently with the office of the Chief of the General Staff. The Chief of Staff has power over framing IDF defence doctrine as well its arms policy and his approval is needed with regard to long range arms development before it is sent to the Defence Ministry. Due to huge reliance on technologically advanced air power, the air force has important contribution in terms of providing relevant information and in overall decision-making process (Klieman and Pedatzur 1991: 115-119). A significant share of Israel's defence programme is allocated to air force that provides them autonomy and empowers the air force to affect the decision-making. To a lesser level, navy also participates in the arms procurement process and enjoys certain degree of autonomy in framing and planning present and future arms capabilities (*ibid*). Due to relatively lesser importance of navy in Israel's security doctrine, the participation is particularly small and the policies are mostly directed towards accessing arms relevant to the requirements of the navy.

The arms policy decision-making process is deeply influenced by regional security dynamics. But it would be an oversimplification to suggest that the regional security dynamics is always

static and perennially unfavourable towards Israel. The nature of the West Asian region is a dynamic process and the various nuances in security situation are subjected to at different times.

Table 3.7: Israel's largest defence companies, 2007

	Rank	Total sales (US\$ millions.)	Exports as percentage of total sales	Number of employees
IAI	5	3,310	82	15,570
Elbit Systems	8	1,982	80	7,600
RAFAEL	14	1,286	58	5,460
IMI	26	575	56	3,150
Plasan	53	303	98	720
TAT Technologies	150	90	92	500
Magal	178	73	78	300
Soltam Systems	188	67	79	330

Source: Lifshitz 2010: 271

Prominent Defence Industries

The defence firms in Israel can be divided into three broad categories. In the first category, there are large government-controlled companies such as IAI, IMI and RAFAEL that are responsible for production of weapons system. In the second category, companies belong mostly from private owned firm and are medium sized such as El-Op, Elbit Systems and Elisra that emphasize production of defence products. The third category consists of firms producing limited line of products such as Ordan specialising in heavy metal casting in tank armour; Soltam focusing on mortars and canon barrels; Beit Shamesh Engines responsible for refurbishment and fabrication of jet engines; BVR that develops computerised aircraft simulators and airborne interrogation systems; Magal focusing on security systems; Astronautics develops command and control systems; International Technologies produces laser designators; and Rokar providing navigation equipments (Mintz 1984: 114-118; Hoyt 2007: 68-73; the US Congress Global Arms Trade 1991: 95-100). The IDF maintain several large

refurbishment plants and maintenance centres within its Division of Technology and Logistics and are responsible for maintaining armoured vehicles, aircrafts, communication equipments and equipments etc. **Table 3.7** notes the largest defence industries with total sales, percentage of exports in total sales and number of employees in 2007.

The IAI was founded in 1953 under the control of Defence Ministry primarily for the purpose of maintenance and refurbishing aircrafts. In 1951 the government signed an agreement with Al Schwiimmer that led to the formation of Bedek Aviation which worked closely with Israeli Air Force to compliment its defence needs. On 1 April 1955, Al Schiwimmer's company was dissolved and Bedek was expanded to IAI as an autonomous unit of the Defence Ministry. On 31 March 1968, IAI was legally incorporated as a government company. In the 1950s, it had developed its capabilities in the modification, upgrade and improvement of fighter and commercial aircraft, helicopters, engines and electronics systems (IAI 2015; Klieman and Pedatzur 1991: 91-93; the US Congress Global Arms Trade 1991: 95-100). Over the years it has succeeded in tapping technologically advanced solutions in case of battle in the air, sea and land and has contributed directly to IDF's qualitative superiority and strength.

It is presently the largest employer in Israel and contains four divisions and 17 subsidiaries. These divisions are aircraft, technologies, electronics and Bedek which are responsible for maintenance, upgrading and overhaul. It is specialised in refitting combat aircraft for the IAF as well as foreign customers and involved in production and modernisation of aircraft for IAF needs. It has gained expertise in aircraft conversion and modernisation programmes, and production of Unmanned aerial vehicles (UAVs), communications equipments, tactical missiles, small armoured vehicles, patrol vessels etc.,(Hoyt 2007: 68-73; IAI 2015). Although the IAI and its Elta division produces wide range of ground and air based electronic warfare and electronic intelligence systems. It has been responsible for upgrading F-14, F-15 and F-16 aircrafts, Yasur 2000, upgrading of CH-53 helicopters and the production of, Dvora patrol tanks, Gabriel sea to sea missile, Phalcon Early Warning aircraft, Arrow Anti-tactical ballistic missile etc. It endeavours to enter international space technology market especially in the manufacture of small satellites for commercial use (Klieman and Pedatzur 1991: 71; Dvir and Tishler NA: 197).

It has taken steps to venture into space exploration and has developed the Ofeq observation satellite, AMOS communications satellite and Shavit launcher. The IAI is under the control of Defence Ministry and the management is appointed by the Defence Ministry, the Board of

Directors represented from the Air force, Defence Ministry, other government ministries and large industrial concerns. While being controlled by the Ministry, it enjoys considerable autonomy in its research and development functioning and has collaborated with major commercial aircraft producers such as Boeing and McDonnell Douglas (Hoyt 2007: 70-71).

The IMI is closely linked, managed and directly under the control of Defence Ministry and has evolved from TAAS that was established during pre-state period in 1933 and specialises in development, integration, manufacturing and life cycle support of modern land, air and naval systems. It produces wide variety of armaments and equipments for all three services and for the export market such as light arms, ammunitions, artillery rockets, tank guns, projectiles, air fuel tanks, chaff/flare, decoys, towed assault bridges and components for military vehicles (IMI 2015; the US Congress Global Arms Trade 1991: 95-100). The strength of the IMI's workforce is 2,900 in 2015 and is divided into three divisions and has numerous production facilities and provides extensive services such as end-to-end product assistance, training and integrated logistics, maintenance, mid-life upgrades, technology transfers and know how (IMI 2015).

The business and production area are spread across land power, aerial systems, naval capabilities, homeland security and services. Forty percent of IMI's produce are spared for the IDF while rest are exported to international market. The IMI has produced weapons and munitions designed and developed to cater to Israeli needs such as the Uzi submachine gun, Galil family of infantry weapons and Hetz 105 mm tank ammunitions. In the international arms market, IMI has acquired credible prestige for the numerous services and expertise by upgrading tank and other armoured vehicles, light vehicles, production and modernisation of artillery systems, development of combat equipments, new weapons systems for the infantry unit etc. (Hoyt 2007: 69-71; the US Congress Global Arms Trade 1991: 95-100). In the mid-1980s, it suffered distress due to the economic gloom in the arms industry and the workforce dropped from 14,500 in 1985 to 3,800 in 1999 (Klieman and Pedatzur 1991: 71).

In 1948, Science Corps or Chemed was established to bring forth R&D units within different branches of the Hagana. It became a civilian agency under the authority of MoD in 1952 and was called Israel Defence Development Authority or Amat. In 1959, Amat was renamed to Israel Weapons Development Authority or RAFAEL that combined with the Science Corps of the various branches of the IDF and started research and development of series of rockets, guided weapons and missiles. RAFAEL became an autonomous entity under the control of Defence Minister who serves as the acting owner bearing direct responsibility for its R&D

activities. It was initially created to carry out research and development for the IDF which are then passed on to other firms. Gradually, it became responsible for design and development of major sophisticated defence systems (RAFAEL 2015; the US Congress Global Arms Trade 1991: 95-100) and played an instrumental role in building the entire Israeli guided programme including television guided glide bomb, cluster bomb, Shafrir air-to-air missile and other precision guided ammunitions. In the post-1967 period, it has contributed to the development of over 100 different systems for the IDF and played an important role in Israel's nuclear weapons programme. Presently it is divided into six divisions, that is, air superiority systems division, land and naval systems division, air and c4isr systems division, manor and technologies division, R&D and engineering division and ordnance and national infrastructure division and is under the control of Defence Ministry (*ibid*).

Like the other firms, RAFAEL also suffered significant economic loss and job cuts due to change in regional and international environment and employment has dropped down from 7,500 in 1986 to 4,100 in 1999 (Hoyt 2007: 67-69). While financially it relied completely on development and contracts for production due to the pertinent need for self-financing, it has shifted its priorities from pure R&D to actual production and has been forced to compete with other firms within Israel and with external players. It is the second largest defence firm in Israel with an annual sale of US\$2 billion and it has a workforce of 7,000 (Klieman and Pedatzur 1991: 71; RAFAEL 2015).

MASHA or Renovation and Maintenance Centres of the IDF Logistics Branch are managed directly by the IDF. The primary purpose behind setting up MASHA was to renovate and modify armoured combat vehicles from Second World War period and Sherman tanks. By the 1970s, it was capable of designing and producing of battle tanks (Hoyt 2007: 69-70; the US Congress Global Arms Trade 1991: 95-100). While securing most of the parts through subcontracts, it assumed the responsibility for manufacture of the Merkava tank.

Besides these government-owned and managed firms, there are large number of private firms and joint ventures that comprise the defence industry in Israel. Some of joint venture companies are owned by Israeli and foreign collaborators. On one hand, Israeli firms benefit from capital, marketing, advanced facilities, access to new and foreign technology etc. from foreign partners. On the other hand, foreign firms can gain advantage in terms of relatively low wage scale for engineers, scientists, highly trained technicians and access to Israeli technology, design, R&D and products. American firms like Control Data Corporation (CDC) have major interest in Elbit

systems and Tadiran Electronics respectively. French firm Turbomeca has collaboration with Bet Shemesh Engines Limited and Finnish firm, Tampela has partnership with Soltam (Hoyt 2007: 69-73).

Tadiran was established by the merger of two industrial plants Tadir that produced lights and Ran producing dry cells or batteries. Over the years, it has specialised in electronics and communications equipment and has emerged as Israel's leading electronics firm. In terms of communications equipment, it has produced personal radios, portable equipments for individual soldiers, long range communications, C3I networks (Tadiran 2015; the US Congress Global Arms Trade 1991: 95-100). In the mid-1980s, to survive the competition, it has diversified its specialisation into civilian technologies such as portable radios, consumer electronics.

Elisra is a subsidiary of Tadiran and is involved in production of electronic equipments in air borne self-protection systems. It has designed airborne systems such as the SPS-2000 for front line aircraft, SPS-1000 for aircraft upgrade market and SPS-65 for helicopters and low flying aircraft and produces number of equipments for the navy. Over the years, it has expanded production in non-defence areas. In 1999, Tadiran and Elisra had merged and emerged as a major player in the Israel's defence industry (Hoyt 2007: 73-74; the US Congress Global Arms Trade 1991: 95-100).

Additionally, there are defence industries that do not have large scale government participation although are owned by Israeli firms such as Telkoor, a subsidiary of Koor Industries that is owned by the Histadrut. It produces military electronics and radar systems (Hoyt 2007: 73-74). Israel Shipyards produces missile boats, commercial vessels and related equipments including Reshef and Aliya class missile attack craft and is owned by Koor Industries and Clal Industries. A small section of defence industries in Israel are wholly owned subsidiaries of foreign firms that play relatively limited role and for example American firm Astronautics CA manufactures cockpit displays and other components (Hoyt 2007: 73-74; the US Congress Global Arms Trade 1991: 95-100).

Besides the government-controlled firms and public sector firms, there are a large number of private firms. Elbit was established in 1966 to develop and produce computer-driven equipment for Israeli military equipments and is involved in IAF's Phantom 2000 upgrade programme and central mission computer for F-16s and provides fire control system for the Merkava tank and integrates similar systems into Western and Soviet equipments. Electro-Optics or El-OP is

responsible for the production of electro-optical systems such as laser designators, night vision equipments, head-up displays for aircrafts. There are other small firms which provide crucial defence industrial inputs and have major impact on the quality of IDF equipment. Rada produces computers, automatic test equipments and air force ground support equipment and is involved in large number of international aircraft upgrade programs. It is also responsible for production of Automatic Test Equipment (ATE) that can enhance its technological efficacy and substitute for multiple highly trained technicians and produces Data Transfer Equipment (DTE) used in F-16, F-5 and Mirage aircrafts (Hoyt 2007: 69-793)

Regional Security Dynamics

Regional security dynamics play a major role in determining Israel's defence industrialisation policies. The constant threat for national survival has resulted in seeking self-defence and armaments (Dvir and Tishler NA: 200). Jurgen Brauer has argued that the primary motivation for development of indigenous arms industry in developing countries like Israel is mostly strategic (Brauer 1998: 5). The constant threat for national survival can be interpreted in terms of recurrent engagement in regional conflict as well as enduring and unending level of rivalry with neighbouring states which provides the impetus to develop and nurture the growth of domestic arms industry. The strategic conditions are further consolidated by the threat to existing arms supply channel and embargoes (Freilich 2006: 635-636). Therefore, in Israel the recurrent security challenge compounded with the fear of curtailment of arms flow had driven the need for self-sufficiency and the development of the indigenous military industry.

In the domestic setting, establishment of domestic industry has surmounted to competition among the neighbouring countries such as Egypt, Syria, Jordan, Iraq etc. Regional security dynamics helps in the formation of defence industry in response to the militarisation efforts in the neighbourhood and Israel's defence industry was established as a result of the volatile security situation since 1948. At the same time, the size of the state is small with very little flexibility in the use of buffer zone and narrow capacity to intake large number of civilian and military casualties. The territorial complications along with small population accentuate the propensity of economic and social constraints caused by conflicts especially protracted battles (Horowitz 2013: 11-19). Therefore, there was a need to maintain an inventory of weapons that are qualitatively superior to end battles as quickly as possible. The emphasis on quality was necessary that can be provided by technologically advanced infrastructure in a well developed industry and availability of viable local military R & D programmes (Dvir and Tishler : 201).

It was however the Tripartite Agreement of 1950 that cropped the inevitable arms race vis-à-vis the Arab states and the 1955 Egypt-Czech arms deal has intensified Israel's efforts to compete against a likely, if not impending, security threat by Egypt. It drove Israel to produce warheads, ammunitions, small and light weapons etc. at a faster pace and desperate efforts were made to convene military relations with the US was unfavourable to meet Israel's immediate security concerns until the next decade. In the interim France emerged as an ally during 1950s and early 1960s (Kinsella 1998: 2; the US Congress Global Arms Trade 1991: 87).

The arms procurement in response to the regional security situation combined with the production of small arms and ammunitions domestically and imports of weapons systems such as tanks and aircrafts mostly from external actors. The consolidation of the domestic arms industry serves to provide autonomy in decision-making in case of conflict and peace. Therefore, in case of regional security dynamics, little or no reliance on external actors helps in pursuing independent decision-making on the question of security. As a result of autonomy in decision making, the effectiveness of external actors influencing in Israel's security affairs and conflict strategies can also be lowered. The availability of domestic defence industrial base helps to gain pre-emptive strategic motive in case of a conflict. The presence of the domestic industry provides Israel with the necessary deterrence required for a conflict. At the same time as a result of Israel's small territorial size and the limited quantity of manpower, it is required to upkeep the arms technologically to maintain a deterring force through advanced equipments and technology against its adversaries.

Economic Factor

Economic growth is a pertinent factor affecting the growth of Israeli defence industry. The defence sector was seen as the foundation for the industrialisation, source of technology, facilities, skills and of foreign exchange. It contributes a sizable proportion of the state's industry and has far reaching economic consequences. The economic supplement provided by the defence industry is important given the fact that output through agriculture is minimal and the economic impetus was necessitated by industrial production. Within the given pattern of industrialisation and due to the prioritisation of security, defence companies fit the picture in providing the technology based industrial vis-à-vis economic growth.

The annual defence budget is composed of allocations for imports, local production, salary maintenance and military construction. The import cost varies from year to year and dependent

on delivery schedules. Approximately one-third of the budget is devoted to local military expenditures. In the general sense, from 1967 and 1985, there was an upward trend in the size of the defence budget. But in 1979, there was rising pressure from Finance Ministry to reduce the size of the fund on defence spending and the MoD reduced the share of imports while stress on local allocation was propagated. The defence allocation for local production was hiked by 3 percent in the same year (Hoyt 2007: 92-96). The overall perception in the 1970s was that defence production led to the overall growth in the economy because defence production besides leading to industrial development, emphasises on selling weapons abroad leading to foreign revenue and economic betterment.

Reliance on defence industrial pattern of development however suffers from a number of challenges. The economic sustainability of the arms companies depends on purchases, both local and external. The IDF's requirements are based on the intensity of short-term and long-term threats faced by Israel. The economic correlations between the defence industry and defence policy makers' purview can create complications in the economy. It must be noted that the production pattern in the defence industries is for long-run. Therefore, during periods of tension, demands for armaments naturally increase and at the same time, arms demand subsides when tensions are diluted. In effect, rise in sale has positive effects of the economy whereas low sale can cause serious negative impact on the economy and continued arms production is perceived as a burden due to negative growth (Dvir and Tishler NA: 201).

In terms of arms exports, the complications can arrive due to instability in international politics. The countries that engage in defence relationship can be prone to political instability which has happened on numerous occasions in late 1970s and 1980s leading to significant losses in Israeli arms industries. Overreliance on arms exports can lead to specifications in designs in accordance with recipient countries' demands which may not necessarily cater to Israel's demands. Under such condition, more specific production and development can lead to over time labour and production surpluses. Above all, over production is harmful for a small economy like Israel (Mintz 1984: 112).

In the broader sense however, there is consensus on the positive correlation between the defence industry and Israel's pattern of general industrial growth.

Industrialisation and technical autonomy

The need for industrialisation and desire for technical autonomy were primary concern which was filled by indigenous defence industry. The efforts for indigenisation of the arms industry and the overall military industrialisation process is generally gradual in Israel and started primarily with repair, maintain and overhaul of imported systems after which it shifted to assembly of imported arms and production of weapons components under license. After mastering production of significant portions of weapons systems, Israeli industry began focusing on indigenous design and development of weapons systems (Kinsella 1999: 253-260; Brauer 1998: 1-8).

The development of the domestic defence infrastructure therefore serves the process of industrialisation. During the 1960s and 1970s, following the intense arms race with the Arab states which was worsened by the French embargoes Israel opted for the technology-driven development of its arms industry (Peled 2001: 5). The industry was driven by the urge to acquire high military force multipliers that are capable of achieving the required objectives in quicker span of time with limited casualties. The demand to provide modern and sophisticated weapons that can deliver goals with a critical element of surprise heightened the importance of domestic arms companies that can liberate the IDF from relying on external actors for modern military hardware. The rapid industrialisation has led to a significant reduction in external dependence for sophisticated equipments and domestic defence industry has direct correlation with import substitution industrialisation (Klieman and Pedatzur 1991: 53-54). The industrial development in defence has reduced the import needs and the indigenisation of the domestic arm industry was therefore driven by the need to secure technical autonomy.

The indigenisation of the defence industry and emphasis on technology-intensive development has increased the demand for technically trained professionals to work in arms industries. The economic advantage of defence based industrialisation has led to curbing of brain drain. Due to the need for highly trained engineers and scientists, the arms industries became viable pool for employment (Kinsella 1999: 253-260; Brauer 1998: 1-8), the highly skilled workforce was available since the period of Jewish immigration from Europe. Besides, training provided British Ordnance Corps during the Second World War came to good use in the initial years of statehood. The establishment of technical facilities such as the Technion, that is, Israeli Institute of technology and other centres for advanced engineering and the scientific training, Weizman Institute and as well as in secondary vocational and technical schools provided technicians for

aircraft maintenance, operation of production lines (Steinberg 1983: 290-292). Arms-based industrialisation has aided in development of underdeveloped and sparsely populated regions in the country. Industrial development in these areas has encouraged industrialisation and employment. Defence firms such as IAI, Elbit, Beta etc. have established industrial units in Galilee and Negev region. Efforts have also been made to transfer industrial units from developed areas such as Tel Aviv and Haifa to these places to expand the industrial outreach (Steinberg 1983: 291-292; Steinberg 1986: 172-173). Additionally, the prominence of the defence industries has led generalised industrialisation in the defence and non-defence spheres. In the 1960s and 1970s, when defence industry had invested heavily in R & D budget, technological enrichment proliferated into the civilian sector. Some companies converted the high level defence related R & D base into profitable hi tech industries which were also assisted by industrial R&D grants from Ministry of Trade and Industry. Arms industries has therefore led to high tech industrial flow being spread to spheres such as heavy manufacturing, chemical, electro-optics, electronics and computers. Technological exchange between the defence and civilian sphere flourished and products developed in the civilian sector like sensors, optics, information gathering technologies etc. were derived from defence R & D (Klieman1998: 116-119).

Israel's approaches to industrial management through system-oriented approach, project management, entrepreneurial approach to problem solving are tactics that are derived from defence sector.⁴ In terms of human resources, the technical expertise earned by technicians, engineer and scientists working in defence industrial sphere are channelized in the civilian industry as many experts join the civilian sector after their retirement. The sizeable portion of defence R & D are spent on funding academic research in universities and research institutes (Dvir and Tishler NA: 196-198; Peled 2001: 3). Overall, the defence industry led industrialisation process enabled the state to develop strong, technology driven economic base and encouraged high-tech industrial exports. Another aspect of industrialisation in the military sphere is the sustenance of the defence industries. In order to maintain the industrial and technological capacity of the arms industries, there is a need to sustain the demand for military supplies. The rate of production must be sufficiently high to bring down the cost to profitable levels without government subsidies. Due to the small size of domestic market the defence

⁴ Civilian R&D in image enhancement, video and audio compression applications, high speed image analysis, optical inspection systems, defect in identification, voice logging systems, Computer Telephony Integration (CTI), cellular telephony, Speech compression in telephony, wide area protection, vehicle positioning, wireless wide area paging, meter detection in air fields etc. are extension of defence sector's technological pouring into civilian sector (Dvir and Tishler NA: 196-198).

industries have opted towards the export market to supplement the domestic demand (Lifshitz 2010: 269-272). The potential for exports promotion strategy and earning foreign earnings have therefore played a major role to ensure the stability of arms industrialisation process. Israel's arms exports policy has led to subsidization of the domestic production which has caused reduction in unit cost of the defence produce. At the same time, arms exports have facilitated increase in foreign exchange reserve thereby reducing balance of payment deficits (Brauer 1998: 8). Israel's priority for high-tech weapons has been able to capture crucial ground in international market in developing as well as in developed countries (Kinsella 1998: 4).

Conclusion

The industrial growth of domestic defence industry was based on concerns over security. The security condition has necessitated the need for a viable arms industry along with developing means to seek external procurement. But the channels of external procurement were limited due to the ongoing conflict resulting in arms embargo and availability of weapons only at a political cost. The endeavour for indigenous development along with access of weapons technology from France had enriched the goal of developing defence-industrial base. The 1967 French embargo was an eye-opening lesson that led to domestic expansion in technological expertise. The incorporation of technology-intensive defence production had led to overall industrial growth and defence industry has become an integral part of its industrial growth. The economic outcome of the prevalence of defence industries is perceived more or less positively although economic discrepancies have occurred in the past. Since 1990s, given the transforming situation and changing needs of the arms demand both domestically and internationally, it has prioritised on technological sophisticated development in defence industrial pattern. The growth process is necessitated and carried out by a composite arrangement among the political circle, defence establishment and defence industry. The policy pattern is framed by these actors on the basis of given situational conditions. It is based on the needs of technological excellence which has perpetuated and led to technology-intensive growth. Another facet of the defence industry in Israel is the predominance of exports in the production psyche. Due to the diverse needs present by the recipient countries for technologically advanced weapons, the insistence on niche technology has been a sustainable aspect behind the continuing growth of the arms industry. The industrial pattern of growth at present is dependent on domestic procurement as well as defence exports.

Chapter Four

The role of External Actors

The zeal for the development of the arms industry in order to cater to the security needs and the overall geopolitical and global context is undeniably the most important factor in development of the Israeli defence industry. The priority on security is based on the perceived existential threat that has preoccupied the policy makers since 1948. There has been undoubtedly a level of transformation over the years but the prioritisation to security continues to be a crucial factor in which Israel manoeuvres its foreign and security policies. In this context, arms industry is seen as an essential ingredient to encompass and ensure the security of the state. Besides stressing on the security question and its importance in the growth, the formation process of the arms industry is attributed to the geopolitical and global circumstances. The assessment on geopolitics can be redressed through the security framework which is primarily based on its strategic location, size of its territory and demography.

In addition to these factors, the role of the global context adds an important dimension to identify the evolution and growth process of the defence industry. The political role played the external players in terms of restricting the arms flow during the initial period was important in determining the development course of indigenous defence-industrial base. Subsequently, the external actors both directly and indirectly influenced the pattern of technology-intensive defence production in Israel. The political, economic and technological contribution of external actors to the industry is complex. It must be noted that the impact of the external factors is not static and has undergone transition affecting it positively as well as negatively during specific time periods. In other words, the indigenous development of the arms industry did not occur in vacuum and contribution of external actors is undeniably an important factor.

This chapter attempts to critically examine the defence industry through the lens of external influences which has both enriched and hindered the development of the industry. Within this debate, the first section discusses the influence of external influence during the early period from 1948 to 1955. The next section highlights the contribution of France which was critical from mid-1950s to 1967 in Israel gaining technological access and production capabilities. The

third section purviews the role of the US in defence industry. Furthermore, both the sections attempts to comprehensively account the political, economic and technological opportunities and restrictions faced by the industry due to its interface with external actors

External influences from 1948 to 1967

During the nascent stage of state formation, it would not be wrong to claim that Israel was severely constrained and the level of cooperation with external actors to fulfil its defence needs was minimal at the best. In the period leading up to the formation of Israel, Zionist leaders were in dire need of financial and military help to tackle Arab militias that were supported by the neighbouring Arab states. Besides smuggling limited quantity of arms from the US and the Britain and small scale production in Jewish settlements, arms sources were limited to handful of rifles, submachine guns, machine guns, two-inch and three-inch mortars and hand grenades (Ben-Gurion 1971: 248, 266-269; Steinberg 1983: 278-280). Legal means to secure arms supply was stalled by the arms embargo imposed by the US since 1947 to reduce the nature and scope of conflict. It was not lifted during 1948 war and after 1950 Tripartite Declaration; Israel's access to arms was further choked (Reich 1984: 155; Lifshitz 2010: 266-267).

David Ben-Gurion had introduced a two-track policy of arms procurement from domestic production and external sources. This policy was intended to maintain supply and attain availability of sufficient weapons. While domestic production started through the development of government controlled companies such as IMI, IAI etc. the second policy aspect regarding procurement from foreign sources was unable to succeed due to western indifference to Israel's arms requirements (Hoyt 2007: 75-76). Due to lack of Western help, Ben-Gurion turned attention towards the Eastern bloc led by Soviet Union. The Soviet response to cater to Israel's acute demand for arms was favourable which was convened through Czechoslovakia (Ben-Tzur NA: 1-6; Kapusnak 2013).

The driving force behind Soviet help was its desire to establish a strategic foothold in the West Asian region through Israel and to gain a pro-Soviet ally (Shlaim 2004: 657-673). In case of Czechoslovakia, during the Nazi occupation, Hitler's deputy Hermann Goering had acquired Skoda plants to convene large scale arms manufacturing. Following the Soviet victory over Czechoslovakia, a large number of arms manufacturing infrastructure and military produce was available in the country. The Zionist leaders initiated active diplomacy to acquire Czech weapons to cater to their security goals (Ben-Tzur NA: 1-6; Kapusnak 2013).

The access to Czech arms was crucial during the 1948 Arab-Israel war. The supplies reached at the right time during Operation Nahshon that ended the siege of Jerusalem.⁵ Between 31 March 1948 and 12 August 1948, under Operation Balak, C-54 Skymaster, C-69 Constellation and C-46 Commando transport planes made more than 100 round trips carrying various weapons (Ben-Tzur NA: 1-6). After Israel's formation, arms contacts with Czechoslovakia continued and expanded until 1950⁶. Due to strong US pressure against arms flow to Israel from Czechoslovakia, large number of these operations had to be carried out through smuggling or other illegal means. The Czech government provided an airbase at Jatech in Czechoslovakia also known as Etzion for training of Israeli pilots, crew and to carry out smuggling activities for aircrafts and weapons from all over the world. It also facilitated the setting up of a wireless station at Israeli mission in Prague to expand the communications infrastructure to coordinate the massive arms transfer by air and sea (*ibid*).

By early 1950s, the military supplies from Czechoslovakia subsided largely due to growing political tension between Israel and the USSR. Since 1948 the former approached the emerging Cold war rivalry between the Soviet Union and the US through the policy of non-identification in order to avoid hostilities with the two great powers, secure access to loans and aid from the US government and to ease the flow of immigrants from the eastern bloc states (Safran 1963: 218-221). The US was suspicious about Israel's tilt towards Eastern bloc countries at the same time, Soviet aid in military as well as diplomatic sphere started to subside by 1950. On 9 December 1949, Soviet Union voted for internationalisation of Jerusalem in the UN showcasing the growing division. During 1950-53 Korean War, Israel voted for resolution in the UN against North Korea that was supported by Soviet Union (Shlaim 2004: 657-673). These divergences along with Soviet Union's disinterest to pursue its strategic policy in the region through Israel also stalled arms supply to Israel. Meanwhile, since early 1950s the Soviet Union developed strategic and arms relations with nationalist Arab states such as Egypt.

The decline in Soviet help subsequently threw Israel in a vulnerable position noted by lack of access to arms (Safran 1963: 226-230). Despite repeated attempts to forge arms links with

⁵ On 31 March 1948, a chartered C-54 Skymaster airplane transported 200 K-98 rifles, 40 MG-34 machine guns and 150,000 bullets and by first week of April 1948, Czechoslovakia supplied 4,500 Mauser K-98 Model P18 7.92mm rifles, 200 MG-34 machine guns and around five million bullets and spare parts on board an arms ship called Nora. Between 31 1948 and 12 August 1948, there were more than 100 round trips carrying arms in transport airplanes of models C-54 Skymaster, C-69 Constellation and C-46 Commando (Ben-Tzur NA: 1-6).

⁶ In June 1948, Israel received 1,100 ZB37 heavy machine guns, around 5000 MG-34 machine guns, 24,760 Czech rifles and 52,440,000 7.92 mm bullets (Ben-Tzur NA: 1-6)

external actors especially the western powers, its policy had failed. Israel was ready to commit to long-term military alliance with the US but was largely ignored (Shlaim 2004: 657-673). These hindrances in arms procurement was majorly responsible Israel pursuing the self-help method for industrial growth and instating the domestic defence industry (Steinberg 1986: 163-165). The size of the domestic industry continued to remain limited primarily focusing on small arms. The pattern of development of its defence infrastructure was related to the lack of arms outreach which forced Israel to remain technologically weak and rely of whatever equipments it managed to purchase. It had to develop spare parts for these equipments on a trial-and-error basis (Hoyt 2007: 75-77).

The lack of required military arsenal and Israel's early arms needs continued to remain choked and dependent on external political environment and transitions. The pattern of Israel's arms flow was intertwined with the political and strategic policies of the external actors. Earlier, the Soviet detachment with Israel occurred due to change in the former's attitude and Israel's desperate attempt to side with the Western powers. The inter-linkage between geopolitical changes and arms flow have determined the condition and growth of the arms industry. The 1950 Tripartite Declaration substantiates the decision of Western powers to link Israel's arms procurement with the stability in the region which had inadvertently harmed its arms procurement. In case of France and Britain, political demands in terms of nationalisation of Suez Canal triggered a positive attitude towards Israel that enlarged the arms flow since mid-1950s. The foreign support in terms of France blossomed in 1955 when Egypt announced the finalization of a defence and arms deal with Czechoslovakia which orchestrated a mindset of strategic threat through Israel's security perspective (Lifshitz 2010: 267; Brauer 1998: 5; Bass 2010).

On 27 September 1955, Czechoslovakia supplied Egypt with large of sophisticated Soviet model tanks and aircrafts⁷ (Crosbie 1974: 51-76; Laron 2007: 1-5; Gazit 1987: 83). As a result of the Czech deal, military balance tilted heavily in favour of Egypt. The Soviet-Czech decision

⁷ 100-150 MiG jet fighters of both the MiG-15 and MiG-17 varieties; 50 11-28 (Ilyushin) bombers; 7011-14 transport aircraft; anti-aircraft guns; training and liaison aircraft; 230 T-34 tanks; 200 armoured personnel carriers (APCs); and 600 artillery pieces, including Russian semi-automatic rifles, self propelled guns, field howitzers, medium guns, and anti-tank guns; and, for the Egyptian Navy, destroyers, submarines, and torpedo boats (Crosbie 1974: 59-61).

to supply weapons to Nasser action came as a response to the 1955 Baghdad Pact⁸ that redirected the epicentre of Cold War from Korean Peninsula to West Asia (US Department of State 2015). In order to heighten its influence in the region, the Soviet Union had pursued a policy of collaboration with the pan-Arab regime under Nasser by providing him with required arms and equipments. Egypt had already obtained quantitative edge in the number of armaments could now secure qualitative advantage as it obtained the latest Soviet armaments (Crosbie 1974: 51-76; Golani 1995: 803-827).

Israel on the other hand had no reserve of submarines or tanks that could fight against the latest Egyptian armoury. While one section in Israel led by Moshe Dayan and Shimon Peres favoured launching a pre-emptive war against Egypt before Nasser could absorb the new weapons, Ben-Gurion stressed on creating conditions for a preventive war by strengthening the armoury by forging strong alliance with one major power, that is, France (Crosbie 1974: 51-76; Ziv 2010: 406-429; Klieman and Pedatzur 1991: 71-75).

The French-oriented arms procurement policy as well as the impending security threat forced the state to hurriedly stress on negotiating with France to gain access to armaments such as jets and aircrafts, tanks and ammunition stocks. Israel was uncertain of its security and agreed to join France and Britain to launch attack on Egypt in October 1956 (Shlaim 2004: 657-673; Golani 1995: 803-827; Uzer and Uzer NA: 108). The discussion to go for war against Egypt was favourable for Israel as it secured a hefty arms deal from France in terms of 100 Super-Sherman tanks, 200 armoured personnel carriers, 300 six-by-six trucks and 20 tank transporters (Ziv 2010: 418). This also guaranteed French support and technical cooperation for the development of its Dimona nuclear reactor. Earlier in 1954, France delivered AMX-13 tanks, 75 mm guns, radar equipments and Ouragan jet fighter planes to Israel. The latter was receptive to Israel's growing demands and subsequently supplied with light tanks, artillery, Sherman tanks, cannons, and Mysteres (Mark IV) jets (*ibid*).

After the 1956 Suez war, alliance between Israel and France enhanced the level of industrial and technological cooperation between the two. The role of France in the growth of Israeli defence industry was marked by years of hesitant but careful efforts due to pro-Arab policy of the French government. In order to permeate its influence in the region, France had earlier

⁸ 1955 the US had initiated a mutual defence agreement known as Baghdad Pact that included Britain, Iran, Iraq, Turkey and Pakistan. It was aimed at forming a coalition to deter the Soviet threat to the West Asian region (US Department of State 2015, Safran 1963: 233-234).

maintained a policy favouring the Arab states vis-à-vis Israel. At the same time, there was an Anglo-Saxon foreign policy orientation among Israeli leadership due to Zionist ties with the English speaking countries (Ziv 2010: 406-429; Crosbie 1974: 44).

Geopolitical necessities had facilitated close strategic ties since mid-1950s. France was increasingly self-conscious of its declining military and economic prowess such as exclusion from 1955 Baghdad Pact due to its involvement in conflict in Southeast Asia and overall role in colonial wars that shrunk the space for regional manoeuvring within Europe as well as in West Asia. France's alliance with Syria was cut short after Colonel Adib al-Shishakli's government was overthrown in 1954 which paved the way for greater Soviet influence in Syria and resulted in a major strategic loss to France (Ziv 2010: 414-416). While French maintained a few strongholds in North Africa, its presence in the region was diminishing. Under such a condition, cooperation with Israel was seen important to boost its political and strategic presence in the region.

The common disdain for Egypt also brought both states closer. Israel faced severe threats from Egypt that escalated after Abdel Gamal Nasser came to power and his call for Arabism and Arab unity was seen in Israel as a call for its destruction (Crosbie 1974: 51-76; Hardy 2006). Egypt under Nasser was militarily strong that could potentially challenge Israel's security and its highly insecure borders. At the same time, Egypt provided strategic support to Algerian rebels who were fighting against French colonial rule since 1954 (Klapholz NA: 2-10).

These commonality and convergence of interests led to the formation of a military alliance between Israel and France. In order to minimise the Egyptian threat, France favoured strategic empowerment of Israel by providing them with necessary weapons (Eytan 2005). For its part, Israel provided France with intelligence knowledge on Nasser's role in the Algerian movement and the details of rebel movement. Therefore, the crucial relationship between Israel and France developed as a result of struggle with Nasser and Algerian rebels (Crosbie 1974: 51-76; Ziv 2010: 415-417). The military engagement between the two convened firmly after Egypt's involvement in Algerian movement.

These developments had serious implications on Israel's small domestic industry. An important facet of its arms policy which has continued in the subsequent years was the establishment of covert military links with external actors. In case of France, due to internal political differences between the Foreign Ministry which was unenthusiastic to venture in defence ties with Israel as

it endangered French influence in the Arab world, France was already facing criticism over the handling of the Algerian issue. Foreign Ministry was insistent that Egypt could be appeased in favour of French interest. The Defence Ministry favoured the armament process as it would grow France's prominence in the region seeking to regain its lost political presence in region, especially in Syria (Crosbie 1974: 29-50).

Israeli leaders therefore sought to establish crucial and covert and personal relationship with a few politicians, bureaucrats, military officials and industrialists. Shimon Peres as the Director General of the Defence Ministry met with Air Minister Diomede Catroux in August 1954. Earlier in July, IDF Chief of Staff, Moshe Dayan visited Paris and met with French Chief of Staff Augustin Guillaume (Crosbie 1974: 45). Israel stressed on establishing a direct relationship between Israeli and French defence ministries often bypassing the French Foreign Ministry so as to enable easier access to French political circle for arms purchasing process. In 1956, a secret meeting was organised by the defence and intelligence elites of both the states in Vermeres close to Paris while ignoring the respective Foreign Ministries which discussed security strategy concerning the intelligence cooperation over the Egyptian issue (*ibid*). Israel due to lack of access to arms from wider variety of states was forced to pertain secretive approaches to fulfil its objectives.

France's interest in the industry enhanced defence cooperation and the industry aided the French arms industry as a potentially favourable model of industrial development. The price of French armaments such as planes was lesser than the military hardware from the US and hence both sides were aware of the mutual financial benefits that could be potentially reaped through deeper defence engagement (Lifshitz 2010: 266-267). Israeli defence industry attempted to procure and absorb the latest defence technologies from France and available latest weapons.

Israel while absorbing French technology was keen to develop its own technological expertise (*ibid*). It was determined to comply with the dual policy of external procurement along with indigenous arms development. In fact, after acquiring licensed production of weapons from France, local production intensified and local innovations in design and changes were carried out on outdated weapons systems. Domestic arms industry also focused on locally designed and produced electronic packages to install in newly acquired French weapons systems and equipments (Hoyt 2007: 75-77). The technological leap within the domestic industry was well-received by France that perceived Israel as a reliable partner for maintaining high-quality equipments especially in the area of aeronautics and missile development.

French support for Israeli defence industry promoted the expansion of hardware potential of IAI and received approval in 1957 for the licensed production of a modified version of Fouga Magister trainer aircraft (Bahbah 1987: 2). At the same time, French help was keen for Israel's missile defence and development programmes as it provided solid fuel rocket motors used in number of missiles. RAFAEL channelized its research on missile technology and large number of missiles was developed such as the Gabriel sea-to-sea missiles, Shafir air-to-air missiles, the Luz air-to-surface missiles, and the Shavit/ Jericho sea-to-sea missiles (Hoyt 2007: 82). Kfir C-2 fighter bomber was based on the framework of French Mirage-5 aircraft (Bahbah 1987: 3). The industry was keen to upgrade obsolete French technology such as Isherman tanks built on the basis of old M-4 tanks. **Table 4.1** highlights the total imports and exports between Israel and France during the period 1959-1961. Israel defence industry secured a deal to produce equipments on the basis of an amount equivalent to 25 percent of military sales to Israel and allowed production of existing equipments without granting access to any new technological findings in France. The offsetting of particular arms to Israel was done to ensure ease in exchange deficit (Crosbie 1974: 184-185).

Table 4.1: Israel's imports and exports to France including military equipments (1959-61)

Year	Total imports in US\$ (million)	Total exports in US\$ (million)
1959	22.7	4.2
1960	25.7	4.5
1961	46.8	4.7

Source: The Middle East Record, vol. 1, 1960, 57; vol. 2, 1961, 82-85, Crosbie 1974: 36.

After Israeli defence industry gained access for production, a level of competition erupted between the two and the relationship changed from supplier-client relationship to competitors in specific areas. Due to lower labour costs that enabled competitive selling, the IAI entered the executive transport field through modifications on the Convair 240 (Crosbie 1974: 185). The Israeli defence industry while gaining technical know-how undertook independent arms policy decisions that were sometimes against French interest. While allowing IAI to produce Fouga Magister under license, France had refused to allow sale of aircrafts to former French colonies. IAI after modifications had loaned two Magisters to Uganda without approval from France and provided training to Nigerian technicians in airframe, engine and maintenance (*ibid*).

Through alliance with France, growth process of defence industry was slow and was limited to modifications, upgrading and licensed production. Israel's strategic availability of necessary weapons remained reliant on changing political mood and policy choices made by France. After establishment of the fifth Republic on 8 January 1959 under Charles De Gaulle (Fedorka 2012: 1), France sought for improving ties with Arab states and Soviet Union that reduced the strategic importance of Israel in France's 'Middle east policy'. It resumed diplomatic relations with the Arab states which was halted between 1956 and 1962 (Eytan 2005).

Israel also began to reorient arms diplomacy and stressed on reducing its dependence on one country, that is, France and widen the sphere of arms engagement with more countries in 1960s (Crosbie 1974: 180-185). Meanwhile, on a limited scale the US initiated arms engagement with Israel after it received short range ground-to-air Hawk missiles in 1963 and received Skyhawk light bombers in 1965. Israel also chose to purchase less expensive M-48 Patton tanks from the US instead of costly French tanks and in 1966, Israel refused to purchase French Triton trainer

aircrafts (Crosbie 1974: 185). Therefore the options to secure arms access were slowly reoriented.

By mid-1960s, security tension between Israel and neighbouring Arab states increased and French diplomatic move in the UN was highly critical of the erupting wave of violence involving Israel against Egypt and Syria. The polarisation among Arab states reduced temporarily due to common enmity with Israel. In November 1966, Egypt and Syria signed a defence pact that opened the possibility of two-front attacks against Israel. In the same month, Israel attacked Al-Samu' in Jordan to fight against Fatah militias and this was widely criticised by international community including France (Caplan 2010: 143-148; Crosbie 1974: 190-214). In May 1967 Nasser had ordered blockade of Gulf of Aqaba that curtailed Israel's navigation freedom. France rejected any help in forcing to open the Gulf of Aqaba and requested Israel not to start the war. France feared that the growing conflict could lead to a global war and emphasised on an accord with support from the four major powers to stop the crisis. De Gaulle warned against Israel initiating any military offensive. As the region was heading for a conflict France unofficially suspended arms deliveries on 3 June 1967 which became official on 5 June 1967 when the June war broke out (Caplan 2010: 143-148; Crosbie 1974: 190-214; Bass 2010).

The political and security climate for Israel was again connected with arms procurement. After the decision was made, French President Charles de Gaulle announced that "France has freed itself from the very special and very close ties" (Bass 2010). Despite Israel's payment for 50 Mirage V planes, their delivery was halted by France and a complete ban on arms sales to Israel was enforced on 3 January 1969 (Crosbie 1974: 190-215).

The sudden loss of strategic relations with France played a significant role in domestic model of defence industrial growth. In the post-1967 period, as a result of French help and self-help based industrial focus, Israeli defence industry had succeeded in establishing infrastructure however limited in size and scale. Therefore, the government introduced rapid increase in investment in indigenous defence infrastructure and employment determined to attain strategic self-sufficiency. Israeli industry due to French help was capable of producing independent weapons design. In 1969, blueprints of Atar-C-9 engine used in Mirage-3 and Mirage-5 were stolen and utilised in building Nesher aircraft (Bahbah 1987 a: 2). At the same time, Israeli political and military elites were seeking new partners to help in arms development and procurement process. After several attempts, it is only in early 1970s that the US entered prominently into the strategic picture in Israel.

Israel-US relationship

Until 1967, the strategic relationship between Israel and the US were minimal at best. Besides diplomatic recognition and financial aid, the space for an evolved Israel-US military cooperation was missing. The US imposed embargo on export of weapons to the region just prior to the adoption of the UN partition plan on 29 November 1947 and was formally announced on 5 December 1947 (Gazit 1987: 85). Although repeated requests were made by members of Jewish community both in the US and Mandate Palestine for the supply of arms these requests were denied (*Ibid*)⁹. The US was also the driving force behind the 1950 Tripartite Agreement that was intended to curb the flow of arms into the region and had an adverse impact upon the arms procurement the new state (the US Department of State 2015; Safran 1963: 218-221). The Arab states, due to their strong relations with individual European states, did not undergo any major stress and continued to purchase arms despite the restrictive mechanisms imposed by the Tripartite Agreement of 1950 (Steinberg 1986: 164). The US continued strict regulations on flow of arms to Israel and only allowed sales of limited quantities of arms and equipments at intervals and approved arms purchases available in the open market (Reich 1984: 154-166).

In the 1960s, Israel received limited amount of weapons and equipments in response to Cold War priorities such as radar system, Hawk anti-missile batteries, Skyhawk combat aircrafts, M-48 Patton tanks, conversion kits and 105 mm guns (*ibid*). In terms of weapon capabilities, Israel has well tested combat experience against Soviet made armaments of Arab armies which was useful for US mission in Vietnam and in the context of Cold war (*ibid*: Bahbah 1987: 3). **Table 4.2** provides an account of US assistance to Israel from 1950 to 1967.

⁹ Moshe Shertok, political head of Jewish Agency requested Loy Henderson, Director of the Office for Near Eastern and African Affairs in the US State Department to request arms supplies on 8 December 1947 (Gazit 1987: 85-86). Chaim Weizman wrote a letter to the US President Harry Truman on 9 December 1947 highlighting shortage of arms supplies (*ibid*)

Table 4.2: US Assistance to Israel, 1950-1967 (US\$ in millions)

Year	Total US Aid	Total US aid to Israel	Economic loans to Israel	Economic Grants to Israel	Military Loans to Israel
1950	4.850	-	-	-	-
1951	4.380	0.1	-	0.1	-
1952	3.839	86.4	-	86.4	-
1953	6.496	73.6	-	73.6	-
1954	5.793	74.7	-	74.7	-
1955	4.864	32.7	30.8	21.9	-
1956	5.402	50.8	35.2	15.6	-
1957	4.976	40.9	21.8	19.1	-
1958	4.832	61.2	49.9	11.3	-
1959	4.954	50.3	39.0	10.9	0.4
1960	4.804	55.7	41.8	13.4	0.5
1961	4.737	48.1	29.8	18.3	-
1962	7.034	83.9	63.5	7.2	13.2
1963	7.314	76.7	57.4	6.0	13.3
1964	5.215	37.0	32.2	4.8	-
1965	5.310	61.7	43.9	4.9	12.9
1966	6.989	126.8	35.9	0.9	90.0
1967	6.440	13.1	5.5	0.6	7.0

Source: Agency for International Development: US Overseas, Loans and Grants (Annual Reports), Laufer 1987: 126-127

Due to political pressures from Arab states, Israel was unable to develop firm relations with the US and latter too deliberately maintained a low profile in arms supply to the region (Laufer 1987: 125-131). In other words, US refrained from being distinguished as a primary arms supplier by either of the contending parties to reduce the propensity in the potential conflict. The US was concerned about disruption of political rapport with Arab states because of any deeper association with Israel.

During the prelude to the 1967 war as well as during the course of war, the US suspended arms deliveries to all the states. Therefore the amount of military loans granted to Israel dropped from US\$90 million in 1966 to just US\$7 million in 1967. During this duration, from 1966 to 1967, economic loans also reduced from US\$35.9 million to US\$5.5 million (Laufer 125: 126-127). The decision to suspend arms flow was also intended to signal the Soviet Union to similarly suspend arms supply to Egypt, Syria and Iraq (Gazit 1987: 101-102). Despite repeated efforts the US failed to convince Soviet Union to block the arms channel to Arab regimes.

After 1967, the US resumed arms links with Israel and supplied Skyhawk aircrafts, supersonic Phantom planes etc. Therefore there is a gradual hike in terms of US military loans to Israel which stood at US\$25 million in 1968 and grew to US\$85 million in 1969 (Laufer 125: 126-127; Bahbah 1987: 3-7). Despite US reapproachment in Israel's arms procurement process, the relationship was less than certain and Israel was convinced to proceed towards indigenous arms manufacturing. The technological access to the latest technology was selective such as the case of M-48 tanks instead of more advanced M-60 tanks and A-4 aircrafts instead of Phantom II multi-purpose fighter which only reached in October 1968 (Hoyt 2007: 85). Non-dependence on external powers became the primary policy priority in the post-1967 period. Under such circumstances, the massive financial and material focus on domestic industry became one of most crucial aspect in its arms acquisitions policy and the industry became capable of locally producing weapons systems. Merkava tank, Kfir fighter aircraft and Sa'ar fast attack craft were produced locally (Hoyt 2007: 75-82).

Losing strategic partnership with France as well as non-reliability on the US to maintain unrestrained arms flow drove Israeli defence industry to seek non-dependence. Like France, the US arms policy towards Israel continued to rely on political conditions. The political grounds for the US were reconciliation with Soviet Union and maintaining relations with oil-rich Arab states and reconcile with Egypt and Syria which would weaken Israel's growing diplomatic position with the US (Gazit 1987: 104-106). On ground level, the anxiety was heightened after the US indefinitely delayed the decision to deliver additional demand of 25 Phantoms and 100 Skyhawks. The delivery of Phantom planes that was agreed earlier however continued (*ibid*). In 1970 the level of military loans to Israel again declined from US\$85 million in 1969 to US\$30 million in 1970 (Laufer 1987: 126-127)

During the War of Attrition between Israel and Egypt, the US supplied Israel with 200 M-60 tanks, 175 mm long range artillery, 24 Phantom planes and 24 Skyhawk planes. The US however expected political concessions from Israel to comply with the UN Resolution 242 which sought to withdraw from the occupied territories. The US failed to convince Israel to accept the territorial concessions and as a result additional demand for 54 Phantoms and 120 Skyhawks was denied (Gazit 1987: 104-106). Therefore Israeli defence industry continued to suffer from the linking political terms and objectives with its arms procurement.

At this stage, the US commenced on a limited supply of essential weapons but the US was seen with suspicion as it used arms aid as a means to intrude and influence the conflict in the region. Besides, supplying less sophisticated weapons such as M-48 tanks and A-4 aircrafts instead of more sophisticated F-4E aircrafts, it attached new conditions that further harmed Israeli arms acquisition policy (Hoyt 2007: 85). According to new arms supply policy communicated by the US on 18 March 1970, it stated that in future the US would supply weapons to Israel depending on actual losses suffered by the Israeli air force (Gazit 1987: 106). It suggested that future arms deals would have a flexible timetable and public disclosure would be evaded during arms transaction negotiations.

Israel objected to the new terms such as flexible timetable as it would restrict long-term strategic planning and developments along with need for additional responsibility during regular usage of planes in the absence of a specific guarantee and time period for newer arrival. The new terms also crippled Israel's political manoeuvring as the US in order to fulfil self-interest could direct Israel for political concessions. Israel was insistent that its policies in the region should not be linked to the US arms supply policy. At the same time, public disclosure of arms

deals had a deterring effect on Arab states whose evasion would only enhance greater aggressive moves by Arab states (Gazit 1987: 106-112). The guidelines by the US however prevailed and although number of arms transactions continued there was a degree of uncertainty during this period

Within Israeli political and defence establishment, arms dependence proponents argued that external dependence is 'defeatist' and loss of national will. In this respect, Shimon Peres proposed domestic production of major weapons systems, small arms and ammunitions. These developments propagated the policy of 'strategic' self-sufficiency in weapons procurement (Klieman and Pedatzur 1991: 73-74). But former chief-of-army staff Yitzhak Rabin focused on the long-term impact of security in absence of major supplier like the US and argued that US supply guaranteed delivery schedules, lower prices and experience in combat were assured from external supplier (*ibid*). The level on US reliance was also negotiated between Defence Ministry and IDF that suggested the economic and strategic benefits. But the Finance Ministry raised concerns about costs of repayment and the negatively impact on the defence industry (Steinberg 1998 a: 105).

The US agreed to delink the political issues with regard to the Arab states and Palestinians and the flow of arms after the Israeli efforts in Jordan to stabilise the Hashemite regime during the Black September event and deter Syrian intervention in the state in 1970. Along with this, in December 1971 after a historic meeting between President Richard Nixon and Israeli Prime Minister Golda Meir, the tide for greater arms cooperation shifted towards Israel (Gazit: 1987 108-109). The US stressed on the importance of 'ongoing relationship' and 'long-term program of modernization' which were received with excitement in Israel. This transition in US policy was the result of Soviet reluctance to adhere to arms limitations in the region. The effect of Cold war rivalry, increasing importance of Israel in the US strategic equation and acceptance as a major supplier were instrumental in upholding the balance of arms in the region and facilitated the transformation process among the US policy makers to view Israel as an important strategic partner with an enhanced role in the region.

Political conditions in terms of containing Soviet influence continued to be an important factor for external arms procurement and turned positively in favour of Israel leading to a favourable impact on the arms procurement policy. In 1971, Israel and the US signed an agreement on technological cooperation for technical information and help in defence production. This agreement did not lead to co-production as the US feared that it would only enhance

competition in international market (the US Congress Global Trade Report 1991: 100-101). Arms supplies from the US however increased substantially during the 1973 October war. At the end of war, cooperation was hastened and Israel succeeded in gaining access to major weapons systems and infrastructure needed to rebuild the required arms inventory. The US decided to provide at least 25 per cent more arms to Israel than the arms received by Egypt and Syria from Soviet Union. Following the October war, the Arab states imposed an oil embargo on the US and Western states but the US military aid to Israel continued irrespective of the embargo (Gazit 1987: 110-112).

Again, political turns in mid 1970s had negatively impacted the arms industry due to the US decision to reassess its 'Middle East' policy. During the six months reassessment between March to September 1975, while the US continued to deliver equipments such as tanks, guns, aircrafts etc that were committed, it refused to sign any new arms deals. The US also withheld a request for a multi-annual review of Israel's defence needs (Klieman and Pedatzur 1991: 160-172). To reiterate this point, Ahahon Klieman and Reuven Pedatzur have observed that "the flow of arms from the US to Israel is very much contingent on the nature and atmosphere of the larger, overall political-strategic relationship existing between the two countries at any given point" (Klieman and Pedatzur 1991: 170).

The non-reliance in the US supply was based on several instances of serious delays in arms supply during 1973 war, temporary withholding and embargoes and denial for licensed production of weapons systems such as F-16 aircrafts and geopolitical conditions (*ibid*). In terms of geopolitical considerations, in order to appease Egypt to continue with the peace negotiations with Israel as well as maintain its security in February 1978 the Jimmy Carter Administration presented Congress with a US\$4.8 billion proposal to supply arms to Egypt and Saudi Arabia along with Israel.¹⁰ Saudi Arabia was added in the proposal due to its anti-Soviet and pro-US stand and its strategic importance for the US. Contention erupted in their relationship after the US opposed the usage of Cluster bombs by Israel in Lebanon in 1978 (Gazit 1978: 115-116; Mark 2004: 1-2).

Israeli arms policy also suffered from temporary embargoes due to Israeli military actions in Iraq in June 1981 and Lebanon in July 1981 and Golan Heights (Mark 2004: 1-4).¹¹ At the same

¹⁰ It proposed to sanction US\$1.9 billion containing 15 F-15 and 75 F-16 to Israel, US\$400 million containing 50 F-15 to Egypt and US\$2.5 billion containing 60 F-15 to Saudi Arabia (Reich 1984: 29--31).

time, due to priority to maintain US political interest, Israel's arms needs were satisfied from time to time. Israel was alleviated to the position of being a 'strategic asset' in US discourse after the Iranian revolution in 1979 and Soviet invasion of Afghanistan. Israel was also useful for funnelling American arms in Central America (Gazit 1978: 115-117; Mark 2004: 10-12).

At the same time, in response to Israeli commitment to withdraw from the Sinai Peninsula as per the Camp David Agreements of 1979, Israeli industry received military loan and military grant worth US\$2.7 billion and US\$1.3 billion respectively in 1979. The US provided financial help for the construction of two bases in the Negev and enlarged the financial aid package in terms of loans and gifts while reducing the extent of direct purchases in the following years (Gazit 1987: 83-124). In case of defence industries, the 1979 Memoranda of Agreement (MOA) allowed the companies to participate the US government bidding and focused on R&D cooperation and was allowed bidding in around 500 specified defence items (the US Congress Global Trade Report 1991: 102; Bahbah 1987: 5). Earlier in 1977, the US-Israel Bi-national Research and Development Foundation was developed to offer funding to Israeli firms that was interested in specific projects required in the US (Bahbah 1987: 5). In the 1983 Agreement Joint Political Military Group (JPMG) was concluded which is attended by high level officials from both the states to discuss and coordinate on common issues of concern such as WMD proliferation, terrorism, economic factors, technological cooperation, regional stability, extra regional factors and arms control initiatives (Sharp 2014: 7). The US assistance to Israel from 1967 to 1983 has been noted in **Table 4.3**.

¹¹ In June 1981, The US decided to withhold the delivery of 4 F-16 that was promised in the 1978 MOU between the two states. The US also refused to purchase equipments from Israeli defence industry (Gazit 1987: 117-118)

Table 4.3: US Assistance to Israel, 1968-1983 (US\$ in millions)

Year	Total US Aid	Total US aid to Israel	Economic loans to Israel	Economic Grants to Israel	Military Loans to Israel	Military Grants to Israel
1968	6.894	76.8	51.3	0.5	25.0	-
1969	6.791	121.7	36.1	0.6	85.0	-
1970	6.787	71.1	40.7	0.4	30.0	-
1971	8.078	600.8	55.5	0.3	545.0	-
1972	9.243	404.2	53.8	50.4	300.0	-
1973	9.875	467.3	59.1	50.4	307.5	-
1974	8.978	2,570.7	-	51.5	982.7	1,500.0
1975	7.239	693.1	8.6	344.5	200.0	100.0
1976	6.413	2,229.4	239.4	475.0	750.0	750.0
Transitional Quarter	2.603	278.6	28.6	50.0	100.0	100.0
1977	7.784	1,757.0	252.0	490.0	500.0	500.0
1978	9.014	1,811.8	266.8	525.0	500.0	500.0
1979	13.845	4,815.0	265.0	525.0	2,700.0	1,300.0
1980	9.694	1,811.0	261.0	525.0	500.0	500.0
1981	10.549	2,189.0	0	764.0	900.0	500.0
1982	12.324	2,219.0	0	806.0	850.0	550.0
1983	14.202	2,498.0	0	785.0	850.0	550.0

Source: Agency for International Development: US Overseas, Loans and Grants (Annual Reports), Laufer 1987: 126-127

The 1984 Memorandum of Agreement (MoA) expanded the scope of Israeli defence companies to carry out defence exports to the US and the number of items for bidding was increased. The MoA also decided to stop US officials from veto after the bidding process was over (the US Congress Global Trade Report 1991: 102). The growing intimacy is reflected in the overall value of military aid and the 30 to 40 years loans were converted to grants and the annual financial package was fixed at US\$1.8 billion in 1985. The US in 1985 provided an additional package of US\$1.3 billion to Israel in terms of economic aid to stabilise the volatile Israeli economy (Steinberg 1998 a: 104). In the same year, military loans were ended and the US commenced on providing military grants maintaining an annual grant of US\$3.1 billion (Mark 2004: 12-13) The total amount of US military assistance was US\$107 million which has increased to US\$450 million in 1987.

The US funding was largely devoted to the purchase of US-made advanced weapons platforms, technology components and other sophisticated military equipments. Only a small amount of the aid packages were devoted to local production and R&D packages (Steinberg 1998 a: 104-106). At the same time, initial deployment of weapons systems need to finance local infrastructure and training requires spending in local currency. Hence, since 1990s, Israel has been allowed to convert up to 20 percent of the US assistance into local currency and the local industry has also been provided offset and 'buy back' arrangements thereby opening substantial export orders (*ibid*).

Its incorporation as part of US initiated Strategic Defense Initiative (SDI) granted Israel the position of being a major non-NATO ally thereby opening access to wide level of arms technology and systems except weapons and technologies which were prohibited by international suppliers regime such as the Missile Technology Control Regime (MTCR). It also provided opportunities Israel to bid for the US defence contracts (Steinberg 1998 a: 106; Mark 2004: 1-4). In 1986, Israeli laboratories, research facilities and the companies were allowed to participate in SDI research and 1987 MoA involved further R&D and logistics support and increased SDI research (the US Congress Global Trade Report 1991: 102). In 1987, the US provided financial assistance worth US\$100 million for production of anti-tactical ballistic missile (ATBM) called "Arrow" conducted by IAI and other Israeli companies (*ibid*).

Defence purchases from Israeli companies had widened in the subsequent years. Besides, leasing 2 Kfir aircrafts, arms exports from Israel has been primarily in sub-systems and components carried out through off-set agreements. The US purchased mini-RPVs, mobile

bridging equipments, mortars, radio communication equipments, tank launch bridge equipments, plow bulldozer system for Counter Obstacle vehicle, laser range finders etc. Israeli companies have largely benefitted from the widening scope. IAI secured US\$ 200 million contract to upgrade F-5 jets and General Dynamics and RAFAEL has collaborated to produce Adams Mobile Defence System. The data-transfer equipment for F-16 aircrafts produced by General Dynamics has contribution of Rada Electronics Industries. Besides, the laser system in super Cobra helicopter was built by IAI (the US Congress Global Trade Report 1991: 102).

Besides this, the US also committed to finance Israeli indigenous weapons systems such as Merkava tank and the Lavi combat aircraft. The Lavi project was largely funded by the US and based on Israeli efforts and a few American components. Due to the soaring cost of the project which was incompatible with its potential capabilities, it was finally cancelled in 1987 (Zakheim 1996: 1-15). Initially, the US funding was exclusively directed towards the project, however the US agreed to allow one quarter of the funding to Israel currency and devote for local R&D programmes (Sadeh 2001: 711; Steinberg 1998 a: 106). The cancellation of the Lavi project was watershed moment due to realisation by the domestic industries about its financial limitations and overcome the fact that it is IDF's chief arms supplier. Since the 1990s, there has been a change in the nature of US assistance. While Israel had insisted the US to continue with the programme of military assistance, the share of economic assistance declined which has continued in the last decade. **Table 4.4** highlights to level of American military and economic grants to Israel from 1997 to 2015. While minor tussle in the relationship surfaced again in 1988 after the US warmed up ties with the PLO, the intensity in the relations and overall level of institutionalisation witnessed a tremendous growth and Israel became and continues to be the largest recipient of US foreign assistance since Second World War (Ruebner 2012: 12-15).

Since the end of the Cold war, the nature of relationship has witnessed a shifted due to changing ground realities. Earlier, one of the significant factors that led to the growth of the military and political alliance was the perceived threat of Soviet Union. The common concern over Soviet penetration in the region, Soviet military funding and the growth of 'radical' Arab regimes which had maintained an aggressive politico-military position towards Israel were the dominant factors leading to closeness in the US-Israeli relationship (*ibid*). In the post-Cold war era, common security concerns were shifted from Soviet presence to newer challenges and issues such as proliferation of ballistic missiles, threat of growth in weapons of mass destruction, terrorism, the uncertain peace process and the future relations with Russia.

Minor troubles in the relationship have continued to surface after Israel expressed its dissatisfaction when the US President George H W Bush on 3 March 1990 announced that East Jerusalem is an occupied territory. There were disagreements over an Israeli proposal to hold elections for Palestinian Peace negotiations in 1989 and US insistence to investigate the killing of several Palestinians by Israeli police in Jerusalem on 8 October 1990 (Mark 2008:12-15). The relations saw an improvement during and after the Iraqi invasion of Kuwait in 1990 after Israel adhered to the US appeal to restrain from retaliating against Iraq which had attacked Israel with Scud missiles. The war against Iraq also heightened the demand for arms in the region including Israel and the latter maintained its modernization programmes which were actively assisted by the US (*ibid*).

Table 4.4: US Bilateral aid to Israel (1997-2015)

Year	Military Grant in millions (in current US\$)	Economic Grant in millions (in current US\$)
1997	1.80	1.20
1998	1.80	1.20
1999	1.86	1.08
2000	3.12	0.94
2001	1.975	0.83
2002	2.04	0.72
2003	3.08	0.59
2004	2.14	0.47
2005	2.20	0.35
2006	2.25	0.23
2007	2.34	1.20
2008	2.38	-
2009	2.55	-
2010	2.77	-
2011	3.00	-
2012	3.07	-
2013	2.79	-
2014	3.10	-
2015 request	3.10	-

Source: Zanotti 2014: 35

By 2007, the amount of American military aid to Israel had surged to US\$2.38 billion. In 2007, Israel and the United States signed MOU to set the parameters of bilateral aid for 10 years from 2009 to 2018. The US in compliance with the MOU announced to devote US\$30 billion to Israel during this period in form of military aid. It is a 25 per cent hike in terms of annual average over the previous years (Ruebner 2012: 7-8; Sharp 2014: 7-9). In 2013 and 2014, the US had reiterated its plans for future assistance and presently 23 percent to 25 percent of Israel's defence budget is generated through annual Foreign Military Financing (FMF) grants offered by the US. Joint production has continued presently. In 2013, Elbit Systems and American company Rockwell Collins collaborated to produce helmet for F-35 pilots (Sharp 2014: 7-9).

In the past decade the growing intensification in the relations has largely continued and in terms of military projects such as Iron Dome, David's Sling, Multi tiered missile and rocket defence, the US funding has been paramount. The plan to design and produce High Altitude Missile Defence System or Arrow III was formulated in October 2007. The system has been co-funded by the US and is a joint collaboration between IAI and Boeing. It was tested in January 2014. David Sling is a short and medium-range system to retaliate against long-range rockets and slower-flying cruise missile. This programme resulted due to co-production agreement signed in August 2008. In case of Iron Dome which has built to intercept short-range rockets between 2 to 45 miles. The US has provided US\$ 704 million for Iron Dome batteries, interceptors, co-production and maintenance costs. It has been built by RAFAEL and a co-production agreement was entered with Raytheon in 2014 (Sharp 2014: 9-11). As a result of budget cuts in the US however, the amount of military granted is expected to cut down of the military aid and Israel might lose US\$250 million by 2018 (Ruebner 2012: 1-23; Sharp 2014; 5-17).

Thus, over the years Israel's access to American technology and financial cooperation has expanded due to political and strategic relationship that has developed in 1970s and particularly after 1979 Camp David Agreement. The US also benefitted from the strategic partnership with Israel. The latter's strong and efficient infrastructure has been capable to incorporate US technological specifications and has contributed to a variety of sub systems and power multipliers since late 1980s (Kannegatti 2007: 65-73). Israel's defence and arms capabilities have been specifically beneficial for the US to maintain its strategic interests in the region. The combat experience Israeli weapons have gained due to constant state of war with neighbouring states as well as with non-state actors has been an important strategic asset for the US.

Israeli firms have designed arms and equipments after accessing the specifications of terrain, climate and performance of potential enemies. Kannegatti has argued that the US has learnt “tactics of interception, aerial dual capability, decreased use of searchlights, increased use of thermal sights of night fighting, the increased use of tanks and armoured personnel carriers (APC), improvement in command, control and commutation, facilitating the coordination of air, land and sea operations down to the unit level” from Israel’s battle experience and the combat effectiveness of the armoury (Kannegatti 2007: 65-73). Due to joint ventures and access to american technology, israeli firms has been able to contribute technologically and enhance the performance of these weapons. Israeli expertise has helped in the development of high-technology intelligence gathering equipments and enhanced R&D activities in the US (Kannegatti 2007: 65-73; Eisenstadt and Pollock 2012: 3-9). During the Cold war, Israel had captured large number of Soviet tanks such as T-62, T-72 tanks and Mig-23 and Mig-25 aircrafts and studied their technology. Israel’s technical expertise had been used by the US to prepare for combat operation against Soviet equipments in Vietnam.

Due to common types of arms and weapons used by Israel and the US, the latter has benefitted from Israeli methods for maintenance and repair services. R&D solutions from Israel are faster, flexible, less bureaucratic and cost-effective. Israel has suggested cost-effective solutions regarding platforms of anti-tank missile system, repairing of helicopter rotor blades, modifications of M-48 and M-60 tanks (Kannegatti 2007: 65-73). The US penetration into israeli arms technology has also benefitted its export market. The success of israeli battle experience has allured potential buyers to purchase American products largely due to its combat efficiency (*ibid*).

Political context continues to play a determining role in Israel’s arms policy. Israel’s actions on Palestinians, adamant attitude towards the settlement issue and disagreements on the matters of terms of negotiations have continued the stress the relationship. President Barak Obama has expressed his displeasure on numerous occasions on Israel’s non-compliance of international law as well as over Israeli actions in occupied territories. The uneven nature of arms relations between the two countries, the US enjoys considerable influence over its arms production and exports. The disproportionate impact in terms of financial and technological leverages in executed through the US veto over Israeli arms deals to other countries such as China over the Phalcon deal in 2000 (Klieman 1991: 160-172; Kumaraswamy 2005: 93-103). The US enjoys significant upper hand in international export market and in case of competition with Israeli

products, it can potentially utilise its influence and veto to curtail its arms production and export potential such as in the case of Kfir aircrafts. Earlier in 1977, due to use of US made General Electric J79-17 engine, the US had vetoed supply of 24 aircrafts to Ecuador. In 1982, the US had vetoed supply of Skyhawk planes to Argentina (Klieman 1984: 40-51; Klieman 1991: 160-172).

The US enjoys discretion to turn down and withhold particular weapons requested by the US. It has power over financial flow for arms production and has bargaining power over arms production and supply. In such case, Israeli industry has to comply with cost increases and uneven technological standards. Despite failing to satisfy Israeli standards, it had to purchase Apache helicopters in 1990 from the US (Klieman 1984: 40-51; Klieman 1991: 160-172).

In domestic industry, despite the negative consequences of external procurement, arms dependence on the US is unavoidable. In terms of positive impact of external procurement, due to lack of material resources and limited economic resources, full-scale indigenous production of every major weapon system is impossible. Indigenous production and the related financial cost can potentially drain resources causing long-term complexity in the economic, political and strategic context. External procurement has served commercial advantages such as securing less expensive weapons systems. The Israeli industry has attained relative autonomy in the production of small arms and it possess certain edge in others. In the areas of upper mid-level production such as mainframes, engines, helicopters, certain advanced technologies and major weapons systems, Israel has inadequacies technologically and financially that can be met only by external procurement (Klieman 1991: 160-172). At the same time, domestic industry's goal for arms independence in developing niche technologies has remained valid. Arms independence is also related to national prestige, evasion linking arms flow with political interests, economic growth, industrialisation, employment and importantly overall security. Under such perspective, defence industry has sought a middle ground through the policy of interdependence linking domestic production with external procurement. Under this policy, Israel is reliant on external powers such as the US for major weapons systems while focusing on niche and sophisticated technologies domestically. The policy of interdependence through joint financing of defence projects, co-production and collaborative project development helps in burden-sharing. In fact, Israeli companies on a smaller scale had practised these policies in the past with France and later on with the US. The post-cold war period had accentuated these ties and Israeli firms such as IAI, RAFAEL, ELTA Electronics Industries, Tadiran, Elbit Computers

Ltd., Soltam, El-Op etc. have participated in joint ventures with US-based companies such as General Electric, General Dynamics, TRW Defense Systems Group, American Electronics Industries, Rospatch etc (*ibid*).

In case of its relations with France and other European states, there is growing closeness especially in the area of arms with France ending the arms embargo in 2011 when it purchased Heron unmanned aerial vehicle from Israel (Hershco 2013: 2-5). But on political level, European states has largely been critical of Israel's stand on the negotiation process with the Palestinians.

Conclusion

The critical role played by external actors has been both positive and negative. On one hand, the process of external procurement although gradual had resulted in important dividends in domestic industry starting from access to licensed production and modifications to securing technology and equipments for production of indigenous weapons systems. At the same time, after 1973 war, domestic production was revitalised, however excessive focus on defence spending had negative impact on the economic growth. Due to the economic turmoil, Israel became increasingly depended on the US for its defence needs and bought a variety of equipments from the US that were earlier produced by the domestic industry. The level of defence-industrial cooperation witnessed integration during this period. While in 1970s the US supplied Israel with sophisticated weapons to gain political leverage vis-à-vis Israel and to enhance its prominence in the region, the nature of arms supply in 1980s ceased to be one-sided. There was a large number of technology-sharing joint ventures, co-production etc. The shifting nature of arms transaction increased Israeli dependence on the US supplies and hence its ability to create, field and export qualitatively superior weapons faced severe constraints

On numerous occasions, due to the defence industry's demand for external procurement, Israel has suffered from political tensions arising from regional security dynamics, differing political interests and arms embargoes leading to denial, cancellation or delays of crucial armaments. In this light, Israeli defence industry has followed a dual policy of relaying on external procurement leading to access of technology and funds while insecurity prompts it to rely on domestic production. In this process, it has managed to establish a relatively successful pattern of defence-industrial growth. Nevertheless, the entanglement of external procurement in the Israeli arms industry is undeniable and has been continuing.

Chapter Five

Arms Exports and Defence Industry

Arms production in Israel is deeply linked to the process of national security, economic growth, industrialisation, technological autonomy and employment. Due to intense security situation and quantitatively wide variety of weapons available to its adversaries, Israeli defence industry was required to achieve qualitative edge in comparison to its neighbours. Under such perspective, defence industry has oriented its focus on technologically sophisticated arms and equipments in order to meet IDF's crucial security needs. But the economic costs of high-tech production can potentially cause tremendous pressures on the local economy. In this respect, arms trade has tried to fill the gap between IDF's high-tech security needs and economic costs. The share of arms exports in overall defence production and total economy was small in the initial phase and increased exponentially since 1970s. In fact, arms trade is critical for economic sustainability of the defence industry and health of the economy and most importantly, channelizing economic resources from the international arms market to satisfy domestic defence needs.

At the same time, the defence industry was established due to national security considerations and therefore it would be impossible to delink arms exports from the concept of national interest. Due to highly competitive and volatile nature of arms exports, the space for military relationship for a medium-tier arms producer like Israel is small. Due to recurrent hostilities with neighbouring states, a large number of states were unwilling to convene diplomatic ties with Israel. Therefore, the defence establishment was forced to cultivate trade relations with other politically isolated states such as South Africa, Taiwan and autocratic states in Central America, South America, Africa and Asia. Gradually, arms trade became an effective tool of diplomacy with large number of states that were diplomatically unwilling to showcase their ties with Israel and the latter developed an effective military-based relationship with most of them. Arms sales have immense contribution in consolidating national security objective as well as framing, guiding and executing its foreign policy.

This chapter will examine the intertwining themes of economic perspective and the question of national interest and how does arms sales fit into the picture. In the first section, the impact of

arms exports in Israel's defence industry will be studied and analysis will be drawn on how changes in patterns of arms exports have affected the defence industry. At the same time, the effects of transition within defence industry and its repercussions would be analysed in detail. The second part will look into the importance of arms exports in foreign policy. In this case, political transitions within recipient countries, changes in national, regional and global level have also influenced the patterns of arms exports. Therefore the changes and continuities in nature of arms exports through the lens of national security and foreign policy will also be delved. The last section will identify the problem areas in Israel's arms exports policy in terms of economy, national security and foreign policy.

Linking domestic arms production and arms trade

The security necessities for Israel due to hostile geopolitical conditions had intensified the need for military readiness and the goal of arms procurement. Under such conditions, since 1948, Israeli leaders had sought to satisfy the needs for arms from external actors. Arms production is deeply linked to the process of national security, economic growth, industrialisation, technological autonomy and employment. The concerns for national security arises from the environment of hostility since the formation of the state. For Israel, the notion of insecurity is posed in terms of diplomacy, politics, economy, technology and military (Bahbah 1986: 19-31). In the sphere of military, uncertainties in terms of denial by the US to supply arms during 1948 Arab-Israeli war, cutting the arms flow as a result of 1950 Tripartite Declaration and 1967 French embargo had hindered the arms procurement process. The US imposed temporary embargoes, delays and cancellations in 1970s and early 1980s which had complicated the availability of required arms and equipments.

At the same time, the external arms procurement was heavily influenced by vested political and security interests of the major suppliers. Until 1950s, Soviet Union through Czechoslovakia had supplied substantial amount of arms and equipments which were critical during the 1948 war (Ben-Tzur NA: 1-6; Kapusnak 2013). Due to alignment of Soviet political interest with Arab states as a consequence of Cold war politics, this channel dwindled subsequently. At the same time, French military alliance can also be observed through the lens of its national interest such as 1956 Suez crisis, common enmity towards Egypt etc. After 1970s, the US emerged as a dominant partner in economic and military sphere. In the case of the US, the availability of weapons came with at political cost. The American interest in the regional as well as global

sphere had determined the quantum and sophistication of arms available to Israel (Lifshitz 266: 266-267).

The hostile geopolitical context created due to recurring tussle with neighbouring states has led to high degree of militarisation in the region. The Arab states tended to benefit in terms of sources of arms supply and resources. The unfavourable political and strategic environment for Israel was accentuated by the easy availability of arms for the Arab states from wide variety of external sources such as Soviet Union, the US, Britain, France etc (Hoyt 2007: 75-78; Steinberg 1983: 279-280). In terms of resources, neighbouring Arab states enjoy quantitative superiority in terms of size, population and material resources.

The political setback for arms procurement due to hostile security condition, arms embargoes and availability of weapons at a political cost had ignited the policy of self-reliance leading to the growth of indigenous design, development and production capability in arms and equipments. The small infrastructure established during the pre-state era was expanded in the early 1950s leading to the growth of numerous government-controlled defence industries such as IMI, IAI, RAFAEL, MASHA etc (Klieman 1985: 15-29; Klieman and Pedatzur 1991: 71-79).

Arms production has been as integral part of Israel's industrial development process. Michael Moodie has noted different stages of defence-industrial production in Israel. These are development of facilities for maintenance and overhaul for service and repair of imported arms in 1950s. It was followed by local assembly of imported parts under license and simple components. Following this, defence industry convened local production of entire weapons systems under license such as French Fouga Magister aircrafts and also undertook locally designed modifications into weapons systems under license. Since the early 1970s, defence industry was capable of producing indigenously designed and tested systems through the usage of highly sophisticated imported components such as Kfir aircrafts using General Electric engine. By 1970s, defence industry became capable of producing domestically designed systems without using any imported parts (Klieman 1984: 15). At the present stage, the defence industry has reoriented its focus on development of niche technology such as electronics, computers, software devices, remote-sensing satellites, unmanned aerial drones, missiles etc.

As evidenced from the stages of defence-industrial production, the industry has insisted in developing technologically sophisticated arms and equipments to gain qualitative advantage and

maintaining technological edge for the IDF over its adversaries. The stress for achieving qualitative edge has been hallmark of the defence industry since the earlier phase (Klieman 1984: 1-26; Steinberg 1983: 285-306). The technology-focused initiatives were however slow due to lack of help from external players and the small size of the economy. The exponential increase in arms investment, infrastructure and employment only rose after the 1967 French embargo. After this period, the process and stages of arms production have stressed on technological quality and had a tremendous role in the industrialisation process of the state. The technological stress on defence industry has permeated the R&D effects into the civilian sector and the local industry had crucial benefits in terms of human resources, availability of large number of skilled workforce and low labour costs. Therefore the industry has catered to manpower situation by employing technologically-skilled individuals and has helped in solving the issue of brain drain (Steinberg 1986: 163-188).

At the same time, Israel's security condition is identified with recurrent conflict while the nature of the conflict may have shifted from 'existential threat' posed by neighbouring states to threats located in peripheral neighbourhood such as Iran and the presence of non-state threat such as Hamas and Hezbollah (Klieman 1998: 112-132). Therefore, technological innovation is a primary necessity to cater to the changing nature of threats. In this case, defence industry has attempted to incorporate such innovations. These needs have facilitated arms production on a long-term basis.

But local manufacturing is very expensive and due to huge start up costs, technology and capital intensive nature of arms industry and defence production, large scale production lessens the production per unit costs and R&D and tooling costs. As Aharon Klieman has argued:

Economics of scale mean that each additional tank or plane built and sold lowers the cost per unit of all the rest, with the result that adding foreign sales to contracts with the IDF makes it possible for Israel to produce for its own weapons it otherwise could not afford (Klieman 1985: 85).

Therefore, extending production runs in terms of large scale production lowers the cost per unit. If the IDF is the sole consumer of the domestic defence industrial production, Israeli government has to bear the cost of capital investment and R&D. Foreign purchases of Israeli defence products can reduce the cost on the local economy and hasten greater recovery of defence expenses. Therefore arms trade is intrinsically linked to the overall economy in general

and IDF's security goals in particular. The technology-intensive requirements of the IDF and heavy cost involved are therefore channelised through foreign revenues earned from exports. The production of technologically sophisticated arms and equipments requires sufficient investment in infrastructure as well as monetary resources to cater to tremendous labour costs (Steinberg 1983: 298-303; Steinberg 1986: 181-183).

Arms sales can provide revenues required for newer innovations which would have been restricted due to Israel's limited financial resources. Arms exports play an important role in reducing the cost of development and procurement of weapons for the IDF (Steinberg 1983: 298-299). Arms exports also help in reduction of import substitution and lowers trade deficit. Since the level of arms imports in Israel is heavy, the growth of defence industry and profuse use of arms exports enabled Israeli economy to cater to the problem of imbalance of trade caused by arms imports. Arms imports have resulted in growing proportion of the national budget being devoted to repayment and interests for loans for arms imports. In such case, defence industry's stress on arms exports has helped to neutralise the deterring effect on Israel's economy. As mentioned before, besides easing the economy through import substitution, arms exports has sought to enhance the volume of exports both directly and indirectly. The export of military products such as aircrafts and defence electronics contributes to the state revenue and at the same time the technology, facilities and infrastructure produced by defence sector is compatible for the civilian sector (*ibid*).

Related to this, arms sales revenues have helped in reduction of large quantity of surplus weapons and equipments by selling it to other countries and securing financial revenues. To attain the qualitative edge, the industry is required to phase out outdated weapons at rising prohibitive cost. The option of arms sales has therefore, led to outflow of outdated weapons thereby providing space and investment for technological innovations. In effect, the burden on the defence budget can be lowered due to availability of foreign revenue and financial investment assigned in the defence budget can be focussed on developing specialised defence products that are pertinent to IDF's needs as well as sufficiently viable in the external market (Klieman 1985: 7-12). As a result of reduction in defence budget due to external revenues, the state's finances can be appropriated in social sphere as well as providing support in non-defence industrial sphere (Klieman 1984: 5-9).

Additionally, in case of economic crisis and high rate of inflation domestically, in which the share of defence budget can be cut down, export initiatives can potentially help as the real cost

of the defence products can be absorbed in the international market. Arms exports can therefore dilute the high rate of inflation and rescue the economy.

Arms exports due to its high economic potential have also led to increase in R&D. Israel have traditionally focussed on technology-intensive defence manufacturing and have attained technological credibility internationally. In order to cater to international market it is required to maintain its technological upkeep. Thus, the international arms market has played an important role in funding and expanding Israel's innovative research. Arms sales and external funding has direct impact in reducing the share of domestic investment which has been mentioned previously (Steinberg 1986: 181-186). The previous chapter has highlighted the technological spin off that transgresses from defence sector to non-defence industrial sector. Therefore enhancement in R&D can reach civilian sector and develop civilian technologies that are also presented for exports. Due to convergence of military and civilian spheres, civilian sector has benefitted immensely and has oriented its approach for exports due to high R&D in Israel's defence industry.

Another important economic benefit of arms exports is the general expansion of defence industry in Israel. The resulting effect of expanding and stable defence industry is the large - scale employment in defence companies. Due to need for highly skilled technicians, scientists and engineers in order to maintain the industry and cater to domestic demands as well as exports, a huge section of manpower is absorbed. Defence production in general has mitigated the problem of unemployment and brain drain and has employed technically skilled immigrants in workforce (Klieman 1984: 7-8).

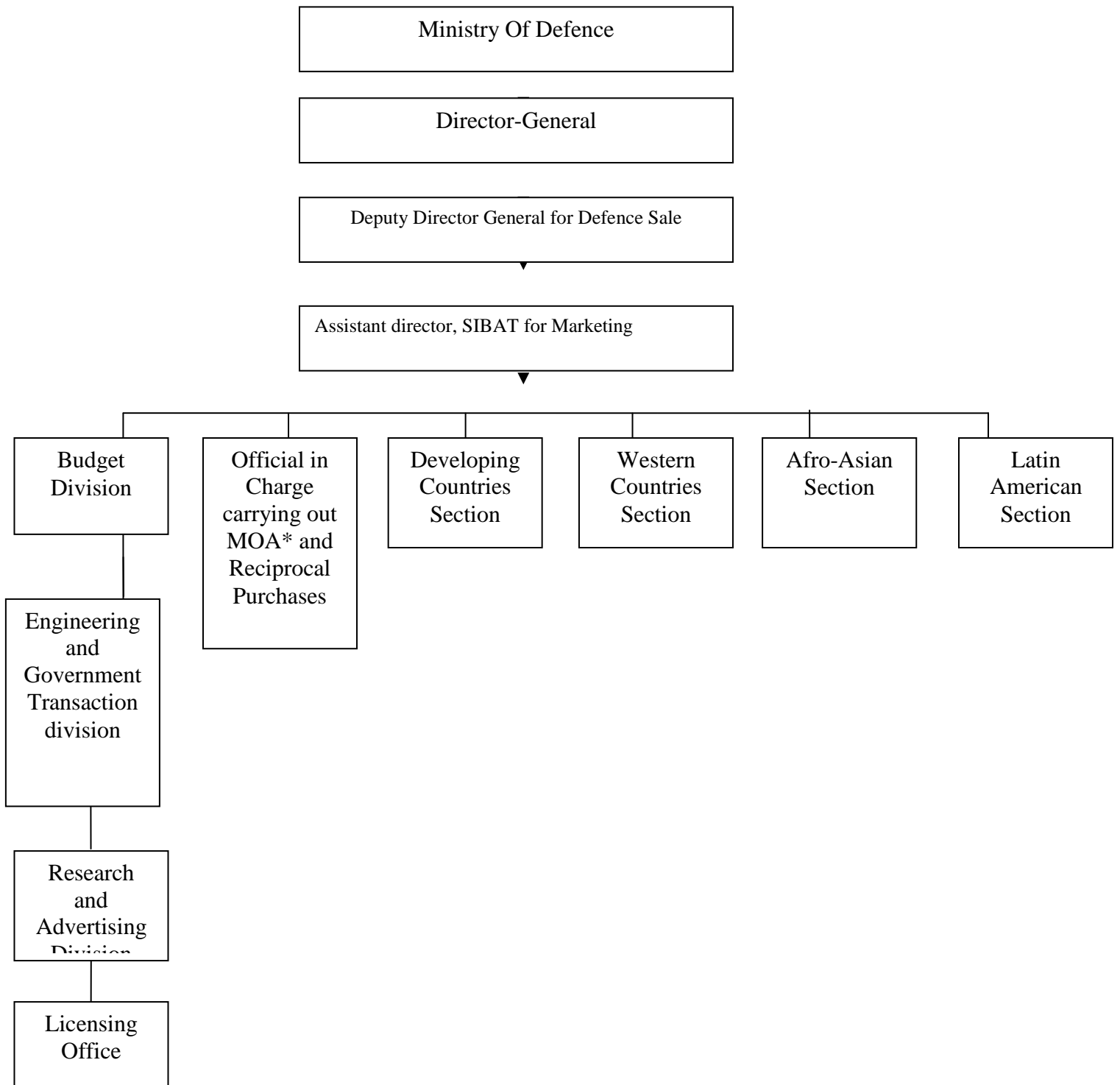
Export production has helped in keeping production at full levels and in ensuring that critical equipment are available in event of a crisis. During the October 1973, when 50 percent of workers from defence firm AEL Israel were serving in reserve force, the firm managed two-months production in one week to ensure availability of spare parts (Hoyt 200: 92). Besides, the security situation in the region is unpredictable and in the past, the states in the region have faced sudden conflicts and full-scale wars. Ongoing arms trade is essential for maintaining the ability to permanently mobilise factors of production such as labour, plants, machines in order to mobilise extensive need of production during the period of emergency at a smooth and rapid pace. Production targeted towards exports has enabled the industry to develop reserve capability (Klieman 1985: 58).

Actors in Arms Sales Decision Making

Arms exports policy is part of the wider understanding of its defence industry. The defence industry was established due to necessities of security and the needs for arms. The shortage intensified by external pressures to curb the arms flow and limited domestic resources drove efforts to initiate indigenous defence manufacturing process with the help of a reliable ally. In absence of reliable ally the growth remained limited. While witnessing slight growth after French aid became available, the manufacturing was limited to licensed production, overhauling and upgrading and production of small arms (Hoyt 2007: 67-68).

The arms sales policy in Israel is framed at the highest level by the Ministerial Committee on Weapons Transfers composed of the Prime Minister, Foreign Affairs Minister, Defence Minister and Minister of Industry and Commerce. The decision making in arms sales is authorised by the IDF and is influenced by the decision concerning types of arms and equipments to be sold. Ministry of Foreign Affairs screens the appropriation process and decides on countries for not receiving arms. On a daily level, Defence Sales Office (SIBAT) within the Defence Ministry carries out coordination and implementation of authorised arms sales. SIBAT is responsible for advertising, marketing, developing contacts with prospective customers and represents the government, the IDF and defence firms in all sales (Bahbah and Butler 1986: 33-38). **Fig. 5.1 displays the Organisational Chart of SIBAT.** The export policies are highly strengthened and influenced by strong military set up in the form of the IDF and its influence over the Israel's leadership (Bahbah and Butler 1986: 33-38). Defence industries are also formidable actors in overall arms policy decision making. In effect, the arms export is seen as a high priority area to drive growth within the firms. Labour unions working in the arms industries and scientific community have also intensified the drive for arms production including exports. The influence of these factors and the overall priority to arms sales grew exponentially by 1960s and more prominently after 1973 (Bahbah and Butler 1986: 33-38; Hoyt 2007: 88-93).

Figure-5.1: Organizational Chart, SIBAT



Source: Klieman 1985: 104

Arms Exports from 1954 to 1967

As early as 1954 or prior to the French help, Israel had established firm ties with Burma, now Myanmar, on the basis of military cooperation that portrays Israel's intentions in pursuing priority on arms sales at the nascent stage (Klieman 1984: 11). Israel conducted arms sales and cooperation with a few countries in low scale and despite its technological and economic limitations in the 1950s and in 1960s. In August 1954, Israel sold 30 second hand Submarine Spitfire fighters and related equipments, machine gun ammunition, bombs, rockets and spare engine parts for the sum of US\$1 million to Burma. Israel agreed to provide military and technical expertise and Israel Air Force trained six air force pilots from Burma and sent technical team for training on the maintenance and operations for the aircrafts. Israel also sent officials and materials for modernisation of Burmese Army and military intelligence (Ashton 2000).

Israel received a military mission from Burma to impart knowledge and training on suitable structure of National Defence Force for efficient utility of reserve force in 1954. Both convened formal diplomatic ties when Director General of the Defence Ministry Shimon Peres and Chief of Staff of IDF Moshe Dayan visited Burma in 1958. In 1959, Burma's Prime Minister and Chief of Defence Forces General Ne Win visited Israel (*ibid*). The early initiatives of interactions on arms exports continued and in 1954, Israel exchanged an arms agreement with the Netherlands in which it received artillery shells and it paid by exchanging Israeli produced military products partially besides paying in cash. Israel also sold 2 reconvered frigates to Sri Lanka. Israel developed relations with Nicaragua worth US\$1.2 million and Dominican Republic worth US\$15 million respectively during this period (Klieman 1984: 11)

In 1959, Israeli firm, Soltam decided to provide mortar bombs to Federal German Republic despite some internal opposition. This move showcased Israel's tenacity to pursue arms sales at a keen pace. By 1960s, Israel had developed military ties with several countries in Africa and supplied second hand and surplus weapons of IDF, small arms and provided technical advice. The share of arms sales in the total economy increased gradually. In early 1960s, Israel earned US\$6.5 million annually which increased to approximately US\$15 million in 1966 and US\$ 30 million in 1967 (Klieman 1984: 11-12; Steinberg 1986: 183-185).

Table 5.1 provides an account of Israel's defence exports from 1963 to 1967.

Defence infrastructure was formalised and seeped into the industrial space and resulted in securing foreign transactions through arms exports, political and administrative structure for the conduct of arms sales in international market was developed and expanded.

Table 5.1: Israel’s Defence Exports, 1963-1967

Year	Arms Exports (millions of constant US\$ 2007 rates)
1963	2.0
1964	1.0
1965	1.0
1966	0
1967	1.0

Source: ACDA, World Military Expenditures and Arms Transfers, Hoyt 2007: 113

Nature of Arms Exports in post-1967 period

After the June 1967 and the French embargo, severe emphasis was devoted to development of the domestic industry which led to stress on high technology. The focus on technology-intensive defence production was coincided with desire for securing strategic independence. The strategic dependence on defence industry led to a technological revolution in the quality of arms and reaped extensive benefits for arms exports (Steinberg 1986: 183-184). During the course of October 1973 war, Israel started receiving efficient weaponry from the US. This enabled Israel to free and export outdated and old modelled weapons systems. The desire for technological sophistication indigenously and through external help has helped the IDF in upgrading aircraft engines, warships, armoured fighting vehicles and missiles. Israel therefore released outmoded weaponry, that is, 18 percent in missiles, 37 percent in aircraft and 45 percent in naval ships between 1977 and 1980 and exported them to other countries (Klieman 1984: 14-15). The dynamics of arms exports had intensified in 1970s due to precarious security requirements (Steinberg 1986: 300).

Israel’s political isolation and absence of reliable military partners drove Israeli policy makers to pursue technological intensive and qualitatively superior arms policy. In terms of political isolation, Israel’s actions and occupation of Arab territories as a result of June 1967 war led to refusal by many countries to nurture formal diplomatic ties (Steinberg 1983: 298-302).

In such case, arms sales were perceived as viable medium for greater exchange with the outside world. One crucial aspect that heightened the demand for Israeli designed and manufactured arms was the successful combat experience that was displayed by the IDF in 1967 and 1973. The definite qualitative superiority in weapons technology was observed internationally and this enhanced the reputation of Israeli-designed and produced weapons systems. In comparison to industrialised states, the scale of wages for workforce employed in arms companies was less which translates into less expensive technological sophisticated solutions (Steinberg 1983: 298-302; Klieman 1984: 17-19). Finally, arms sales policy received widespread support by successive governments that emphasised on the need to technological and scientific excellence in defence production and identified the economic benefits of exports.

After the October war, technology-intensive defence industries in Israel sought wider outreach in international market. Following intensification in investment in domestic production, sophisticated weapons such as Gabriel missiles, electronics etc. were opened for sale. And the amount of sales increased to US\$50 million in 1975, US\$140 million in 1976 and around US\$300 million in 1979 (Klieman 1984: 13). The growth in arms exports was between 20 to 24 percent per year during 1967 to 1984 (Hoyt 2007: 92). By 1970s, defence manufacturing firms in Israel had diversified the nature of arms exports and gained expertise in indigenously designed and developed weapons systems, technology, services, re-exports, and offsets. During this period Israel developed indigenous weapons systems such as Gabriel ship-to-ship missile, fast attack craft, Arava STOL aircraft and major systems such as Kfir combat aircraft that were sold in the international market (Steinberg 1983: 298-302; Steinberg 1986: 181-187).

Technological cooperation on arms technology was also promoted. In the 1970s and 1980s, the nature of cooperation included providing technological expertise and assistance in manufacturing local version of missiles, rifles and R& D assistance in Central and South America and Taiwan. Israel has convened technological assistance with the US and especially in the area of electronics; it has found buyers in major US firms such as Boeing, Sylvania and Beechcraft (Steinberg 1986: 181-183). Local arms companies was involved in providing technical services such as aircraft, helicopter servicing arrangements, maintenance, repair, reconditioning, upgrading and research and development.

Therefore firms such as IAI were involved in upgrading and maintaining weapons used in industrialised countries as well as by many developing countries that has purchased second hand US or European weapons systems (*ibid*). Local firms participated in offset agreements on arms imported from the US. Through offset operations, Israeli companies gain technical knowledge and opens doors into greater opportunities in the international market.

Besides that, defence firms had undertaken efforts on re-exporting surplus the IDF weapons imported from the US and European states, especially France. The surplus equipments after required reconditioning were sold to South American states such as Argentina that purchased French made Mirage III-Cs, Chile purchased M-4 Sherman tanks and Honduras purchased French made Mystere trainer (Steinberg 1986: 182; Bahbah and Butler 1986: 72-85). Re-exports were conducted on Soviet-made weapons that were captured during wars with Arab states and PLO. Besides, defence production under this process Israel sold to these weapons to the US for military exercises and training (Steinberg 1986: 182)

In terms of arms sales, there is a distinct change in the quality of arms and equipments from 1950s to 1970s. Earlier Israel's export components comprised of small arms like Uzi submachine guns and servicing and reconversion of surplus stocks. In 1960s, the export market expanded from small arms to spare parts for aircraft, overhaul and maintenance activities. Since the 1970s, Israeli defence exports products comprised of increasingly sophisticated products such as aircraft, electronics, patrol boats, air-to-air missiles (Steinberg 1983: 300).

Defence industries in general became highly profitable as a result of the technological boom in the 1970s and resulting high rate of purchases. In 1981-1982, through arms sales, IAI had earned US\$500 million in total sales (Klieman 1984: 27-33; Hoyt 2007: 69-73). In 1982-1983, out of total sales US\$820 million, US\$520 million were earned from arms exports. IAI's popular items for exports were Gabriel MK III sea-to-sea radar guided missile, Barak missiles, Dvora 71 combat boat and unmanned drones such as Scout mini-RPV. IAI also provided retrofitting, upgrading of combat aircrafts and expertise on improving operational capabilities of existing aircrafts. IMI has earned credible reputation in the supply of small arms and ammunitions such as 9 mm Uzi submachine guns, 5.56 mm and 7.62 mm Galil assault rifles. In 1981-82 periods it earned US\$340 million in arms exports (Klieman 1984: 27-33; Hoyt 2007: 69-73).

At the same time medium level industries such as Koor earned US\$ 231 million in mid 1983, Tadiran earned US\$ 174 million in 1982 and Soltam earned US\$ 67.4 million in 1982 through arms exports (Klieman 1984: 27-33; Hoyt 2007: 69-73). Koor and its subsidiaries Koor Electric and Koor Electronics have specialised in telecommunications and communication systems that are exported. Tadiran has developed export market in providing expertise on tactical communication, intelligence gathering, electronic warfare equipment, Mastiff drone, night sensing devices and tank rangefinders, HF-7000 military radios etc (Klieman 1984: 27-33; Hoyt 2007: 69-73). Soltam gained reputation in the international market through sale of 155 mm. howitzer guns and 81 mm. mortars. There are companies such as Elbit, Elta, Electronics Corporation of Israel (ECI) and El-Op which specialise sophisticated electronic computer systems that have appeared in the international market (Klieman 1984: 27-33; Hoyt 2007: 69-73).

Arms Exports contribution in total economy became increasingly visible during this period. The rate of growth of arms exports in total industrial exports increased at 7 percent in 1967, at 15 percent in 1974 and 24 percent in 1977 (Hoyt 2007: 93). The prominence of arms exports in total arms production continued to increase during the 1980s. In fact in 1984, 70 percent of the defence products produced domestically were consumed by the IDF while 30 percent were exported and by 1990s, the situation reversed wherein share of exports grew staunchly to approximately 70 percent while 30 percent were consumed by the IDF. The share of exports continued to stay as high as 75 percent in mid 2000s (*ibid*). **Table 5.2** provides account of Israel's defence exports from 1968 to 1991.

Table 5.2: Israel's Defence Exports, 1968-1991

Year	Arms Exports (millions at constant US\$ 2007 rates)
1968	9.0
1969	3.0
1970	5.0
1971	0
1972	10.0
1973	20.0
1974	30.0
1975	50.0
1976	140.0
1977	60.0
1978	120.0
1980	260.0
1981	140.0
1982	370.0
1983	430.0
1984	210.0
1985	575.0
1986	725.0
1987	700.0
1988	460.0
1989	925.0
1990	440.0
1991	380.0

Source: ACDA, World Military Expenditures and Arms Transfers cited in Hoyt 2007: 113

But by mid-1980s, the local defence industry was affected by economic slowdown resulting in loss of financial stability and employment. The number of employees declined drastically from 80,000 in 1980s to 40,000 in 1990s, to 24,000 in 1994 and to 18,000 in 1996 (Klieman 1998: 113-114). The largest defence industries such as IAI and IMI suffered a deficit of US\$450 million and US\$70 million respectively in 1994 (*ibid*).

Another aspect that surfaced since mid-1985 that affected the overall productivity and especially in the area of arms exports was overdependence on arms exports for economic sustainability of defence industries as well as overall economic growth. The over reliance has created vulnerability due to exposure to fluctuations in international arms market, therefore in case of decline in arms demands in foreign market due to economic distress, it had immediate effect on arms sales in Israeli companies (Mintz 1984: 112; Hoyt 2007: 97). The situation is complicated in light of IDF's insistence on purchasing US-made weapons systems at the expense of local industries (Mintz 1984: 110-115). The demand for locally made weapons was shrinking within the IDF while suffering from the economic fluctuations of the external market.

Israel's ambitious self-sufficiency driven defence industrial development process was non-compatible due to absence of valuable strategic and industrial raw materials within the country. At the same time while it lost crucial market in Iran (Klieman 1998: 113-114) and was facing criticisms for its military alliance with autocratic regimes including Apartheid South Africa (*ibid*), it was not fully successful in penetrating new profitable markets. The size of Israeli firms are small or medium level in the international context which is dominated by the larger companies situated in the US and Europe. Therefore the larger and more influential suppliers in the US, Russia, France, Britain and Germany had strategic and political leverage in competing in the international market leaving little room for Israeli industries. Besides, the defence industrial infrastructure in several developing countries facilitated arms sales in their respective regions due to close proximity and easier access such as South Korea, Singapore, China in East and South East Asian region or South Africa in its neighbourhood. Therefore local industries in Israel suffered the brunt of these developments (*ibid*). At the same time, traditionally Israel's conduct in arms sales has been low key and often secretive. Therefore international treaty mechanisms such as the UN Register of Conventional Arms pose restrictions of its arms dealings resulting in worsening in conduct of arms sales (*ibid*).

In the 1970s and 1980s, the defence industrial policy was oriented towards strategic self-sufficiency and problems arising from internal and external conditions have led policy makers to come realise the limitations. The strategic intention for developing major weapons systems was overshadowed by overt dependence on the US. The cancellation of the Lavi Project in 1987 due to extraordinary costs helped to realise its limitations. At the same time, in the area of small arms and equipments, Israeli suppliers have to share the space with several countries that has developed their infrastructure during this period. Therefore in order to enhance productivity and maintain efficient management of its limited resources, a policy of restructuring has occurred in defence procurement since the 1990s, affecting directly on the quality of arms exports and shift in the locus of export market (Klieman 1998: 115-121; Lifshitz 201: 266-272).

The policy for defence procurement and supply in the international market has been premised on the production of upper level of defence design and production. The stress on niche technology is directed towards production of technology-intensive equipments such as smart weapons, missiles, unmanned drones and expertise in design, upgrading and retrofit data packages that are presented in the international market (Klieman 1998: 115-121).

In terms of arms market, from 1950s to 1980s, Israel in order to curb political isolation had aligned militarily with number of undemocratic regimes. It has supplied arms to the countries in conflicting areas thereby causing the risk of unwanted involvement in local disputes leading to public criticism, diplomatic embarrassments and commercial setbacks. Israel's preference for commercial considerations through arms trade and at times ignoring political sensitivities in conflicting areas has been questioned (*ibid*).

Within the internal administration, the actors in the decision making process has taken steps to secure consensual decisions, accountability and better coordination in policy command and execution. Therefore concrete steps, policy guidelines and exports controls based on red lines with regard with whom to supply, under what form of military aid and what terms. Since the 1990s it has been careful in pursuing arms trade with different countries (Klieman 1998: 115-121; Hoyt 2007: 106-113). Related to this, animosity towards Israel by many countries was diluted during this period leading to opening of diplomatic and trade engagement. Due to prominence of arms industry in the overall economic and industrial setup domestically, arms sales contributed significantly in promoting trade and diplomatic links with a host of countries.

Therefore, specialised and high technology arms and equipments, better administrative approach through careful selection on trade deals and favourable diplomatic position globally have shaped the quality, size and the direction of the arms sales policy. These developments have helped Israeli arms industries to refocus its clientele from undeveloped states, undemocratic regimes to industrialising states in South East Asia, North America, West Europe and East Europe and emerging economies such as China and India (Klieman 1998: 115-121; Lifshitz: 272-275; Kumaraswamy 1998: 42-54).

Arms sales and national interest

The export market is highly competitive. At the same time, Israeli foreign policy is limited. Therefore it has sought to develop relations with other political isolated states. But there are severe disadvantages of economic dependence on arms exports. Israel has been keen to develop political and military relations with industrialised states in Europe and the US. The drive towards betterment in relations was guided by need to secure economic assistance through commercial relations with developed markets. Economic dependence on developed markets can potentially ensure the economic growth and help in reducing the large deficit in balance of payments. Initiatives to deepen political relations with developed states suffered due to the ongoing regional conflict.

In this case, Israel shifted its priority for diplomatic and economic engagement with countries situated in Africa, Central and South America and Asia. Israeli leaders on numerous occasions attempted to align Israel's vulnerable position in the region and sense of victimhood with insecurities and conflicts suffered by the newly independent countries in the third world. The correlation of common victimhood as a result of Western imperialism was also emphasised. Israel showed interest in 'Asian awakening' and in historic mission for uplifting of Africa to gain political leverage and economic stronghold in these countries (Neuberger 2009: 25-27).

Besides, development of relations with the Asian, African and Central and South American countries was warranted to counter the powerful influences mastered by the Arab states against Israel's presence in the region and its conduct on Palestinians. In effect, forging ties particularly in terms of military terms was beneficial to dilute Arab pressure on the Third World. It is important to note that although majority of the developing and under developed countries had voted against it, Israel has managed to secure an alliance with a few African states in the post-1967 period. For example in 1967 after a motion calling for withdrawal from Israeli occupation on West Bank, Gaza and Golan Heights was presented without arriving at a peace agreement,

Israel managed to obstruct the motion with the help of its African allies. Subsequently, the predominant diplomatic motion of these states remained pessimistic towards Israel; however the level of military cooperation which was forged during the 1960s and 1970s helped Israel on several occasions to maintain its international legitimacy with the support of Third World countries (Neuberger 2009: 25-27; Bahbah and Butler 1986: 1-8).

Through arms sales and military occupation Israel has succeeded to restrict Arab pressure on neutral countries. In order to contain the spread of Arab influence, Israel has continuously stressed on developing relations with Muslim countries of Asia and Africa. In its efforts, Israel has succeeded in spread diplomatic connections with Muslim countries in Africa such as Mali, Burkina Faso, Mali, Niger, Chad, Senegal and Nigeria. In the post-1990s, Israel also secured diplomatic ties with Central Asian Republics that were formed after disintegration of Soviet Union (Neuberger 2009: 25-27; Beit-Hallami 1988: 3-22). Diplomatically, it was perceived that through increased cooperation with Asian and African countries, these countries will help in not only moderating Arab pressure but also forge a link between Israel and the outside world.

It is important to note that Israel's relationship with individual African, Asian and Central and South American states has been on a bilateral basis rather than on multi lateral level. In multilateral forums such as 1955 Bandung Conference, Arab-African Casablanca bloc, Afro-Asian Peoples' Solidarity Organisation, Tri-continental organisation, the Group of 77, Organisation of African Unity (OAU), Organisation of Islamic Conference (OIC) and Non-Aligned Movement (NAM) political bias have traditionally been against Israel. But on bilateral level, diplomatic, military and economic relations have been largely cordial despite public criticism due to complex situation in which Israel is placed and global dependence on energy supplies from the West Asian region (Neuberger 2009: 25-27).

Peripheral diplomacy is also an important aspect of Israel's foreign policy perpetuated largely through arms sales. The primary component of peripheral diplomacy is arms diplomacy to develop relations with countries that are outside the immediate vicinity in order to curtail consolidation and lowering the strength of hostile actors in the region. Therefore Israel sought to create alliances with non-Arab countries on the periphery of the region to counter aggressive moves by neighbouring Arab states. Strategically, contacts with these states were crucial and under such purview, Israel developed tacit alliances with Iran, Turkey and Ethiopia and Kurdish groups (Neuberger 2009: 25-27; Beit-Hallami 1986: 8-10). These states have also pursued diplomatic and military relations in pursuit of their individual self-interest.

In Israel's case, a major chunk of the Peripheral diplomacy policy was conducted through arms supply and military aid. In case of Iran, until the fall of Shah, both countries maintained clandestine relationship. Iran supplied Israel with energy resources which were reciprocated by military and intelligence training and technological expertise in arms and equipments such as avionics, electronics, patrol boats, missiles, and spare parts of US manufactured aircrafts etc. Israel supplied large number of Uzi submachine guns in 1964. Both decided to conduct joint research on advance nuclear warheads capable long-range missiles. The total exports from Israel to Iran in 1978 stood at US\$225 million (Beit-Hallami 1986: 13-14). A large share of total exports composed of arms and ammunitions. Besides, providing energy assistance, Iran provided Israel with strategic advantages such as lowering Israel's sense of political isolation, alliance with the US, diluting Iraq's military strength and influence and financial revenue. In the aftermath of 1979 Iranian Revolution, the relationship between the two states deteriorated. During the Iran-Iraq war in the 1980s, in order to counter the common enemy, that is, Iraq, Israel secretly supplied Islamic Republic of Iran with arms, ammunitions, aircraft spare parts and combat engineering equipments to replenish its supplies worth US\$27 million (Beit-Hallami 1986: 13). Israel sent large amount of ammunitions to Iran via third parties worth US\$135.8 million in 1981 and US\$21 million in 1983. Israel was interested to sell 500 M-48 tanks in 1983 which was cancelled due to US pressure (Beit-Hallami 1986: 14-15).

Israel continued to supply arms to Iran during the course of war while not agreeing with the new regime intended to maintain cordial ties on military level. Israel continued to view Iran crucial to dilute Iraq's military strength and as well as a potential partner against the hostile regimes in the neighbourhood. Iran's conflict with Iraq has also led to polarisation with the states in the region wherein Iran has gained support from Syria and Libya whereas rest of the states were in support of Iraq. The level of polarisation within the region was seen as strategically favourable towards Israel. Therefore arms diplomacy was seen as a relevant diplomatic tool to mend and reconvene ties with Iran under the Islamic regime (*ibid*).

In case of Ethiopia, Israel had sought a credible partner for military and economic assistance and to reduce the influence of Pan-Arabism. Israel's connections with Ethiopia have secured Israel's access to shipping lines in Straits of Bab-el-Mandeb and Red Sea Bishku (1994: 38-43).

Therefore due to commonality in strategic goals, both states developed firm diplomatic and military relations. Shimon Peres visited Ethiopia in 1963 and security cooperation between the two states intensified and Israel helped in Ethiopia's military modernisation, training of commandoes and supplied Ethiopia with aircraft maintenance and spare parts (Steinberg 1983: 300). On three occasions Israel also helped to thwarting coup attempt against Ethiopian Emperor Haile Selassie. The relationship deteriorated after the October war when Ethiopia was coaxed by Arab and African states to curtail ties with Israel. The relationship suffered critical blow after the military regime under Mengistu Haile Mariam in accordance to Soviet pressure cut down the already deteriorating relationship (Bishku 1994: 38-43).

In case of Turkey, its intention to forge relationship with Israel was driven by the desire to align and grow closeness with Europe and the US. Due to Western strategic interest in the region and the strategic value associated with both the states, familiarity and closeness grew. In the regional level as well as in the multi lateral forums, Turkey maintained an anti-Israel bias while maintaining low-key cordial relations bilaterally. On 29 August 1958, Israeli Prime Minister David Ben-Gurion and Turkish Prime Minister Adnan Menderes signed a secret agreement for collaboration on common issues such as radicalisation in the region and growing Soviet influence. In the 1970s, Turkey received technical training for intelligence and security services from Israel. In terms of arms, Israel supplied Shafrir air-to-air missile, Hetz antitank shells, Uzi submachine guns, ammunitions etc (Beit-Hallami 1986: 16).

In its efforts towards peripheral diplomacy, Israel also nurtured relations with Kurds fighting for autonomy and sovereignty in Iraq. Israel secretly supplied large number of arms, ammunitions and military expertise and training to these groups since 1963. Israel also organised unofficial meetings with Kurdish leaders in 1966. In terms of security, due its military alliance with Kurds, Israel gained crucial benefits in the June war wherein Kurds mounted an attack on Iraqi state which halted it from contributing in the war efforts financially. After the war, Kurds were rewarded with Soviet equipments captured from the Arab armies and continued to receive financial and military aid in the subsequent years (Beit-Hallami 1986: 16; Steinberg 1986: 183-184).

Another important facet of Israel's policy was firm diplomatic ties with regimes that were non-democratic such as military dictatorship, autocratic political regimes and also rebel groups. Since the initials years of arms transactions, there was a pattern in Israel's military link with states there were internationally criticised. There were several states that forged military ties

with Israel that were shunned due to internal political discrepancies. Israel attempted to reach out to these countries which were either right wing regimes, isolated or both. During this period, several countries in Africa, Central and South America forged military ties with Israel. On the other hand, Israel was insistent on utilising arms diplomacy in order to fulfil foreign policy objectives.

In Africa, states such as South Africa due to its racial discrimination policy known as Apartheid from 1948 to 1994 faced political and economic boycotts. Under such condition, few states including Israel maintained political and economic link with it. In 1955 Israel had supplied Uzi sub-machine guns and in 1962 supplied with 32 Centurion tanks (Beit-Hallami 1986: 108-123; Klieman 1984: 40-44). The military cooperation was helpful for Israel financially as well as strategically. In fact during 1967 when France had imposed embargo, South Africa provided Israel with economic and military assistance.

Israel was also one of the few countries to reject the 1963 UN Security Council resolution 181 calling upon all states to stop “the sale and shipment of arms, ammunition of all types, and military vehicles to South Africa” (SIPRI 2014). Resolution 182 passed in 1963 extended the embargo to equipments for maintaining armaments in South Africa and through Resolution 418 passed in 1977 that made the earlier resolution mandatory. Israel continued to refuse to abide the resolution and supplied it with 400 M-113A1 armoured personnel carriers and 106 mm-recoilless rifles in 1980. The 1984 statistics indicate sale of arms and equipments in which the largest share is devoted to South Africa. South Africa had received 6 missile boats, 36 Kfir jets, large number of Gabriel missiles, howitzers, communications equipments, radar systems, intelligence technology, airplane parts and ammunitions tanks, jets and artillery. Israeli arms companies facilitated technology sharing and permitted production of Galil rifle under license (Beit-Hallami 1986: 116-119). In Zimbabwe too, Israel provided military assistance to White regime and sold Uzi-submachine guns in 1977 and provided US made 11 Bell 205 helicopters (*ibid*).

Israel had military contact with Mobuto Sese Soko’s regime in Zaire. Mobuto who came to power in 1965 was infamous for committing large scale atrocities and human rights violations. In 1964 Zaire received 10 M-4 Sherman tanks and Israel continued to supply arms and provided military training, developing artillery units etc. In Uganda, Israel supported the coup led by right-wing Idi Amin in 1971 and supplied weapons in the initial phase. Israel maintained military connection and training with oppressive Emperor Bokassa regime in Central African

Empire from 1976 to 1979 and succeeded in restoring ties Central African Republic in 1981. It is noted that Israel provided military support to Colonial regime in Algeria and ultra-rightist bodies of French settlers which wanted to continue French regime during early 1960s. Israel also maintained military relationship with Portuguese Colonial regime of Mozambique, Angola, Guinea-Bissau, Cape Verde, Tome and Principe. (Beit-Hallami 1986: 38-76; Steinberg 1986: 183-184)

Israel also maintained relationships with undemocratic regimes in Central and South America and provided arms and training to military regimes in Gautemala under General Romeo Lucas Garcia and General Efraim Rios Montt. It maintained military ties with Somoza regime's hereditary dictatorship in Nicaragua. It had also maintained arms trade with military regimes in Chile under Augusto Pinochet Ugarte, in Argentina under General Jorge Rafael Videla and Lieutenant General Roberto Eduardo Viola and Luis Garcia Meza in Bolivia. In El Salvador, it provided arms to the government and the opposition guerrilla movement that resulted in accentuating the conflict (Beit-Hallami 1986: 76-104; Kaufman, Shapira, Barromi 1979: 104-108). Therefore its diplomatic and military links with autocratic regimes in Africa and Central and South America has been dominant aspect in Israel's arms diplomacy and overall foreign policy. In the 1970s, Israel consolidated military relations with Central and South American states and Israel earned around US\$1 billion through arms sales to South America from 1973 and 1979 (Steinberg 1986: 184). The external and international conditions such as insistence of niche technology, careful selection of countries to establish and continue arms sales and expanding scope to penetrate international market due to Israel's reducing isolation has led to a transition in its clientele over the years.

In the 1960s, the market usually consisted in the African states requiring mostly small arms and ammunitions. A few larger systems were also transacted by few states. With regard to African states, following the oil embargo imposed by the Arab states in 1973, arms ties declined or in many cases remained discreet. Israel also developed strategic relations with countries from Central and South America in 1970s and 1980s (Steinberg 1986: 183-184).

In the post-Cold war period, new avenues have emerged in West and East Europe and North America. Israeli arms transactions with Western Europe and the US initially encompassed equipments specialised by Israeli defence companies that are cost effective or are unavailable elsewhere. Israeli equipments were also received through sub-contracting and offset agreements from US and European projects.

Table 5.3: Major Reported Israeli Defence Exports, 1983

Recipient	Weapons system	Year
Argentina	4 Dabur Patrol boats	1975
	18 Gabriel II missiles	1975
	42 Nesher aircraft	1979
Bolivia	6 Arava STOL aircraft	1975
Chile	Shafirir air-to-air missile	1976
	6 Reshef	1979-81
Colombia	3 Arava STOL aircraft	1980-81
Ecuador	9 Arava Aircraft	1975
	12 Mystere B2 Fighters	1977
	Gabriel missiles	-
El Salvador	24 Magisters and Ouragan jet	1974-75
	5 Arava STOL Aircraft	
West Germany	4 Westwind	1981
Guatemala	8 Arava STOL Aircraft	1976
Honduras	12 Mystere B2 fighters	1976
	3 Arava STOL Aircraft	-
	5 Fast Patrol boats	1980
	1 Westwind Business jet	-
Indonesia	16 Skyhawk aircraft	1980
Kenya	48 Gabriel II missiles	1979
	Patrol boats	1978
Mexico	10 Arava	
Nicaragua	2 Arava	-
Singapore	50 AMX-13 tanks	1969
	155-mm Howitzers	1977
	Gabriel missiles	-
South Africa	6 Dvora boats	-
	6 Reshef boats	1976-78
	108 Gabriel II	Ordered 1977

Swaziland	1 Arava	1979
Taiwan	Gabriel missiles Shafrir air-to-air missiles	1976
Thailand	Gabriel missiles	-
Uganda	10 Sherman tanks	-
US	600 M-48 tank cupolas	1976
Venezuela	3 Arava	1980
Zimbabwe	11 Bell Helicopters	1978

Source: Steinberg 1983: 296

Since 1990s, military and technical cooperation with Europe has intensified (Steinberg 1986: 184; Klieman 1998: 123-125). In December 1995, Israel has signed agreement worth US\$ 85 million with Switzerland for delivery of Ranger RPVs and other electronic equipments. France has resumed ties with Israel in 1993 and has gradually collaborated on drones with Israeli arms companies. Due to technically efficient, combat tested and cost effective price, France has purchases large number of unmanned aerial vehicles (UAV) from Israel and has shown interest in missile research and space research (Hershco 2013: 2-5). Besides, active military cooperation was pursued with Germany and the Britain. In Eastern Europe, countries such as Czech Republic, Hungary, Poland and Romania have sought technical assistance in upgrading and maintaining Soviet designed tanks and aircrafts (Klieman 1998: 125). Israeli defence technology gradually became more specialised and technological advanced leading to demand for Israeli designed equipments.

Israel has sought to enhance arms sales with industrialising states in Southeast Asia and Asia Pacific. As a result of faster economic growth along with regional rivalries, Israel was keen to penetrate the market. Israel since late 1970s and early 1980s achieved foothold in Chinese market through supply of reconfiguration and add on components of Soviet armour, equipments and electronics and the volume of total trade was US\$3 billion (Steinberg 1986: 184; Klieman 1998: 121-126). Between 1984 and 1994, Israel has sold weapons worth US\$ 7.5 billion to China (Hay 2011: 3-4). During that period it was the second largest arms supplier in China and has supplied with aircraft components, missiles, unmanned drones, and electronic items such tank communication, optical equipments (Shai 2014).

Since India normalized relations in 1992, Israel has been active in providing upgrade and retrofitting service to India. In 1996, Israel sold Air Combat Manoeuvring Instrumentation System and two Dvora MK-2 patrol boats and supplied large amount of unmanned aerial vehicles (UAV). India has also purchased Barak anti-missile system and in 2004, India purchased Phalcon airborne early warning system worth US\$1 billion and both countries are also involved in co-production (Inbar 2004: 92-97; Kumaraswamy 1998: 42-54; Kumaraswamy 2002: 192-206).

Arms exports or arms diplomacy has an important role in the domain of Israel's foreign policy. As mentioned before, due to Israel's political isolation that occurred due to recurring hostilities with the Arab states and the occupation, Israel was keen on harnessing political and trade relations with every available channels. Arms diplomacy was also crucial for pre-emptively

denying the Arab states any measure of influence. Defence production is perceived as one of the most significant pillar in national security. Arms sales have been led by diplomatic, military and economy incentives. Due to limited opportunities for forging political and diplomatic relations with other states as a result of its policies and occupation of Arab territories, the space for diplomatic interaction is very limited (Klieman 1984: 6-9). In this case, specialised and manufactured defence items have acquired a credible reputation in the international market. Therefore in the environment of political isolation arms sales provides a medium for Israel to forge trade and diplomatic engagement with other states and have become an indispensable part of Israel's foreign policy (*ibid*)

The success of arms sales as foreign policy instrument is however a subject of debate. In the past, several states have purchased arms and received military aid from Israel while continuing their unwillingness to maintain formal diplomatic relationship. They also discouraged publicity of their diplomatic and military relations with Israel. Therefore the political limitations in maintaining direct ties and drive to pursue arms exports have facilitated a policy of pragmatism and realism in Israel's policy (Klieman 1984: 6-9). As a result of Israel's stress of convening arms sales as part of its foreign policy, the weight of defence relations has continued to grow even when diplomatic considerations has reduced.

Problem Areas in Israel's arms exports policy

Overdependence on arms sales for economic well being is unhealthy. Economic dependence on arms manufacture and arms sales can lead to large economic allocation in defence infrastructure that are not necessarily required for maintaining national security but due to economic considerations such as employment and profits. Related to this, reliance on exports may lead to development of technical specialisation to export market while possessing little relevance for IDF's needs (Mintz 1984: 112-113). These steps therefore lead to product duplication and diversion of its limited economic resources in defence sphere. Excessive economic outpouring towards defence production leads to allocation of limited resources in social and other non defence sector resulting in lack of desired growth (*ibid*). Due to commercial rivalry and need for high growth, there has been several instances of internal competition within Israeli firms that has resulted in losing bids for arms contracts (Bahbah and Butler 1986: 8-10).

In terms of strategy, while arms sales have empowered Israel's national security by providing allies, the opposite is also true. They have contributed to high arms production thereby perpetuating a continued regional arms race with its neighbours (Mintz 1984: 112-113).

Therefore advancement in arms technology has only raised the risk of conflict and more deaths while the issue of national security continues to remain unsolved. Despite the technological endeavours it has achieved in arms sphere and the relative success of arms exports policy, Israel continues to remain vulnerable to international market fluctuations. It must be noted that, despite the relative strides, the Israeli arms companies are relatively smaller than those based in the US and Europe. In conditions of shrinking market and international economic instability, the political and financial leverage by larger companies provides an edge in case of intense competition leaving little space for countries like Israel (Klieman 1998: 112-116). Related to this, dependence on arms sales for economic survival keeps Israel in a fragile position as the past experiences has shown, it can be observed that the clientele of the host of recipient countries may suffer from internal political struggle or external security challenge. In these cases, Israel runs the risk of losing markets. Economic dependence on arms sales weakens the effectiveness of arms diplomacy as instrument of foreign policy (Mintz 1984: 103-125). Due to dependence of arms exports to influence diplomatic postures, in case of change in demand in the recipient countries, Israel's foreign policy suffers from economic and diplomatic loss (*ibid*).

In arms driven bilateral trade environment, states perennially run the risk of being caught up in local power struggles. In case of East Asia and Asia-Pacific region which has been a keen market for Israel. In case of regional conflict and the already ongoing arms race, Israel can be potentially dragged causing a destabilising influence and may suffer from public criticism and diplomatic mishaps (Klieman 1998: 128-129). Dependence on arms products and war economy have severe repercussions and raises questions of morality and increased dependence on conflicts for economic and political sustenance can potentially cause social and moral problems (Mintz 1984: 112-113). Another significant impediment in Israel's arms exports policy is the relevance of Arab pressure. Arab states which hold a major share of world's energy supply continues to appeal international community for reducing bilateral ties with Israel. Therefore persistent Arab pressures can also harm the growth of Israel's arms sales policy (*ibid*).

Continuity in US influence on Israel's diplomatic manoeuvring is a significant impediment in Israel's arms exports policy. It must be noted that Israel's aspirations for technical autonomy has indeed promoted heightened cooperation with the US which has led to increasing reliance on US technology, components and economic resources. With regard to arms sales, due to intrinsic level of strategic cooperation between the US and Israel, the former's approval is required for its arms transactions. Therefore in case of intense competition and commercial rivalry, Israeli companies run the risk of losing business due to US denial. In case of regional

contest such as China the US is opposed to transfer of crucial technology and equipments from Israel (Klieman 1998: 128). In 2000, due to the US pressure Israel had to cancel supply of Phalcon airborne early warning system to China. As a result, Israel suffered commercial loss and had to compensate US\$319 million partly as a refund for the deposit and partly as compensation for cancellation (Shai 2014: 75; Kumaraswamy 2005: 93-103).

Conclusion

Israel's arms exports policy was the product of isolation that led to nurturing of relations with third world countries in the early period. The trade was largely involved in small arms, technical assistance and military training. Widening in technological capabilities had led to expansion in the size and quality of exports and by 1980s and 1990s a major chunk of defence production in Israel was devoted towards exports. In the post-Cold war period, Israel's market has expanded due to reduced international isolation, preference for niche technology and efficient administrative approach. In terms of impact of arms sales on economy, it has led to large scale industrialisation, employment, catered to fiscal deficits, led to import substitution and technology spin off to non defence sector.

Due to hostile security conditions, arms embargoes imposed by foreign powers, availability of weapons at a political cost, and maintaining technological edge for the IDF against its adversaries, arms industries were keen to develop technologically sophisticated, innovative weapons and equipments. But the start-up and maintenance cost on high-tech industry is enormous, production is on long-term basis, long-term production cost is high and the domestic market is small. Therefore the economic stability of the defence industry is channelized through exports. To make high tech weapons for the IDF and subsidize the cost of production, arms trade is necessary. Arms exports helps in subsidizing cost for domestic production and helps in lowering the tremendous cost of domestic production and eases resource mobilisation.

In terms of foreign policy, arms sales are an effective diplomatic tool through which Israel is intent on satisfying security and foreign policy goals. Since 1960s it had initiated the policy of peripheral diplomacy through complex diplomatic arrangements and secured strategic allies. In order to cater to international isolation and gain foreign revenue, Israel had forged diplomatic and military ties with several undemocratic regimes in Africa, Central and South America. In the post-Cold war period, Israel has largely reoriented its market towards Southeast Asia, Asia Pacific, India, Europe and North America.

Arms exports has led to positive output in the overall economy, however problem areas in terms of extensive technological and material resources allocation towards arms exports have stressed domestic productivity and low share in non-defence sphere. In terms of national security, arms exports can potentially accentuate arms race and arms market is prone to market fluctuations and unreliable customers causing hardships for medium level suppliers like Israel. Last but not the least, predominance of the US in Israel's arms technology and in terms of material resources possess threaten to Israel's arms sales autonomy.

Chapter Six

Conclusion

The defence industry in Israel is the result of unique historical, security, political, geopolitical considerations that have affected its strategic behaviour. In pre-state period armament became an important aspect in Jewish self-defence as they sought the realisation of Jewish national home in Palestine. Initially arms were secured through purchases from local Arabs, smuggling and theft from British Mandate authorities. The need for arms drove local production in workshops and the establishment of TAAS. The militarisation process of Jewish community and the events leading to the formation of state intensified the requirements for armaments whose access was severely curtailed. Requests for arms from foreign actors largely failed and the flow remained infrequent.

Over the years, Israel's experience towards external procurement has been marked by lack of external help, infrequent arms supply, and access to arms at a political cost, embargoes, delays and withholding. These forced its leadership to work towards building a domestic defence industry. As a result, since the early stage, while efforts continued towards seeking arms from external sources, local infrastructure was cultivated under the dual policy of external procurement and domestic production.

At the same time, the security dilemma manifested in perpetual state of conflict with neighbouring states since 1948 as well as threats, non-recognition, boycotts, blockades imposed by the Arab states during the initial stage had intensified the requirement for arms build-up which was further limited by lack of adequate external help. In the 1950s the Tripartite Declaration prevented Israel from securing arms supplies from the West. The collaboration with the French which began in the mid-1950s ended in the wake of the June War of 1967.

Drive for local production was induced due to unique geographical, demographic and resource challenges in terms of small size of the territory and lack of strategic depth, tiny population and scarce natural and economic resources as compared to the large size, population and resource availability its neighbouring states.

These issues had propagated the goal of self-reliance, self-defence and independence in arms production towards meeting and satisfying security and political as well as economic needs. The domestic industry has served the goal of economic viability and expanded the scope of industrialisation. It has led to import substitution and improved balance of payments situation. Domestic production has helped in providing economically efficient and cost-effective technology which was either not available to Israel or available at a higher cost. Furthermore, domestic military industry had tremendous impact on the industrialisation process and has generated source for technological innovation, facilities, skills and employment. The technological innovation derived from the industry has permeated into the civilian sphere thereby widening the technological scope of the overall industrial base in the state and has promoted its industrialisation.

After the June War and in light of the sudden French embargo due to Israeli occupation of the Arab territories, the flow of arms and technology was choked. At the same time, help from the US was premised on political conditions that intrude into the regional setting and influence Israel's political and defence-industrial policies.

The defence-industrial infrastructure underwent massive expansion infused with larger investment, incorporation of high degree of technical skills and R&D employment and opening the defence sector to private companies. These efforts were directed to hone strategic-*self-sufficiency* in domestic production and were directed towards the indigenous production of major weapons and systems such as Kfir aircraft, Merkava tank, Shafir 2, Gabriel missiles, Arava and Commodore jet.

But the cost of self-sufficiency is immense and intense prioritisation on aerospace sector has led to disproportionate resource allocation on other sectors. The economic cost of strategic-sufficiency heightened in terms of high R&D costs, investment and salary payments coupled with period of economic gloom since late 1970s and 1980s had severely affected its purpose. Again, reduction of profit margin in exports due to fixed exchange rate for dollar in 1985 has made the self-sufficiency based model unviable.

By 1990s, the defence industry with its limited resource base had realised the economic futility of self-sufficiency and instead focussed on designing and producing technology-intensive and specialised arms and equipments. In terms of major weapons systems, the defence industry has

undertaken several initiatives through co-production, joint financing of defence projects and collaborative project development at different stages from design to assembly. Therefore presently, the defence procurement model is based on dependence on external actors for major and expensive weapons while focusing on indigenous development of niche and sophisticated technology.

The political role played by the external actors such as the US, France and Britain in determining the arms flow into the region and the related restrictions on arms procurement was particularly responsible for Israel opting for indigenous defence-industrial base. Arms sales to Israel were determined by the political interests of the foreign powers which have shaped the level of procurement since 1950s. In this respect, France became involved in the arms procurement and development of defence base primarily due to its political needs in the region and economic needs for arms sales. These stopped after the 1967 June war when France began adopting an explicitly pro-arab positions in the region

The defence industry has continuously suffered due to linking political circumstances and interests with arms supply by external actors. This tendency has been observed in US strategic engagement with Israel. By 1970s and specifically after 1979 Camp David agreement, arms flow from the US has been more consistent while hindrances continued to occur from time to time. In the post-cold war period, external dependence has enhanced Israel's ability to procure major weapons systems while at the same time the domestic industry has stressed on niche technology. The strategic relationship with external actors, specifically with regard to the US, has ceased to be one sided. Newer developments in the present period has opened arms transactions with several developed and developing countries thereby leading to positive growth in the current pattern of growth.

The arms industry in Israel has sought to develop technologically sophisticated arms and equipments to achieve qualitative advantage and maintain technological edge for the IDF over its adversaries. But the scope of technology-focused initiatives was limited by small financial resource base and lack of access to sophisticated arms from external sources. The intensive need for building formidable military hardware to cater to IDF's needs as well as to deal with high R&D costs, salary and maintaining the profitable margin for domestic production forced Israel to look for arms sales as a viable option. Exports allow for extending production runs and pursue large scale production and therefore helping to reduce the cost of production .It also

reduces trade imbalance and import burden, reduce rate of inflation, help in repayment of loans of arms imports and securing financial revenues by dispersing large quantity of surplus and outdated weapons providing space for technological innovation. In case of crisis, export drive helps to keep production at full levels and ensures the availability of critical equipments.

Related to the arms exports strategy, Israel has imbibed clandestine diplomacy to convene arms links which has largely played a positive role in spreading diplomatic outreach. The foreign policy limitations, security dynamics and necessity to convene arms exports to unburden the economic cost of local production have forced the defence industry to develop trade and diplomatic links with other politically isolated states such as South Africa. Clandestine nature of arms sales has direct repercussions on national interest. Due to hostile security environment in the immediate neighbourhood, policy makers has intended to develop arms based trade links with countries that are located in the periphery of the region such as Turkey, Iran, Ethiopia etc. These arms based trade links were primarily secretive in nature and has help in forging crucial diplomatic ties thereby reducing the impact of political isolation.

In the post-Cold War period, the level of region conflicts all over the world has been detached from the superpower rivalry. In the absence of Soviet Union, the US has emerged as the largest arms producer and supplier and its political and economic strength have shaped the pattern of international arms market. The effect of depoliticisation has eased arms transaction and has opened opportunities for Israel to export arms to new markets such as India, China etc..

At the same time, the nature of conflict has undergone transition from superpower-based and backed regional contests and state-based conflicts to non-conventional conflicts due to the emergence of non-state actors. In terms of Israel's security, the level of conflict in the immediate arab neighbourhood has largely subsided. New threats at the same time have emerged from states such as Iran as well as the through the presence of militant groups such as Hamas, Hezbollah etc. Hence the quality of arms transaction from Israeli industry has been motivated by these factors. While depoliticisation has occurred on the global level, the domestic industry has been unable to detach itself from overall depoliticisation due to relevance of changing but persistent security dynamics.

The first hypothesis deals with the question on whether the domestic defence industry have succeeded in ensuring Israel's self-sufficiency in light of hostile regional security environment. Israel had pondered over self-sufficiency after the French embargo in 1967 and aimed at

achieving the goal through large-scale industrialisation in late 1960s and early 1970s. The economic costs of self-sufficiency was immense which led to period of overstretch and eventual decline by 1980s. The persisting hostile environment has continued to impact the policy choices which could not be met only through domestic production of all the major systems, small arms, electronics and computer equipments. As a result there was a shift in its priority and the level of self-sufficiency is confined to designing cutting-edge technological innovations that can be met domestically and cause maximum impact in case of conflict. At the same time, the policy of *self-sufficiency* and total independence in arms exports lost their importance due to considerable improvement in military links with the US since the late 1960s. The improvement of relationship has led to access to US based technology and major systems, economic and military grants, joint collaboration, co-production etc.

Therefore domestic production of specialised arms and equipments and easy access to technologically advanced major systems from the US guaranteed a level of self-sufficiency in order to tackle and maintain qualitative advantage over its adversaries. Secondly, the qualitative edge has been met at the cost of dependence on the US, therefore based on past experience, dependence on external sources has its own limitations in terms of arms procurement, sales policy as well as its political, diplomatic and security manoeuvring. In this light, the arms procurement policy is far from self-sufficient. Therefore the arms industry has attempted to attain high level of technological standards and maintain the balance between dependence and overdependence.

The second hypothesis deals with relevance of arms exports to attain political objectives and reduce diplomatic isolation. The third and fourth chapter has substantiated that in the post- cold war period, arms exports through various measures such as clandestine nature of arms sales and foreign policy objective through peripheral diplomacy has been propagated in order to reduce the impact of diplomatic isolation. The insistence on technology-intensive defence production had helped the industry to secure important markets in Africa, Central and South America and in Asia. At the end of Cold war, channels for diplomatic communication has opened to a large extent. However, Arab pressure and international criticism over Israeli occupation of West Bank and Gaza continues to loom in the foreign policy horizon. These issues have driven Israel to rely on arms sales to a great extent to expand political manoeuvring in the present period. Again, the continued focus on technology-intensive production, cost-effective solutions for weapons upgradation has help the industry to secure profitable ground. In determining the

relevance of arms exports in foreign policy, the second hypothesis stands valid which has been executed through niche-technology based production.

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