

# The Strategic Importance of the Defense Industries in Israel

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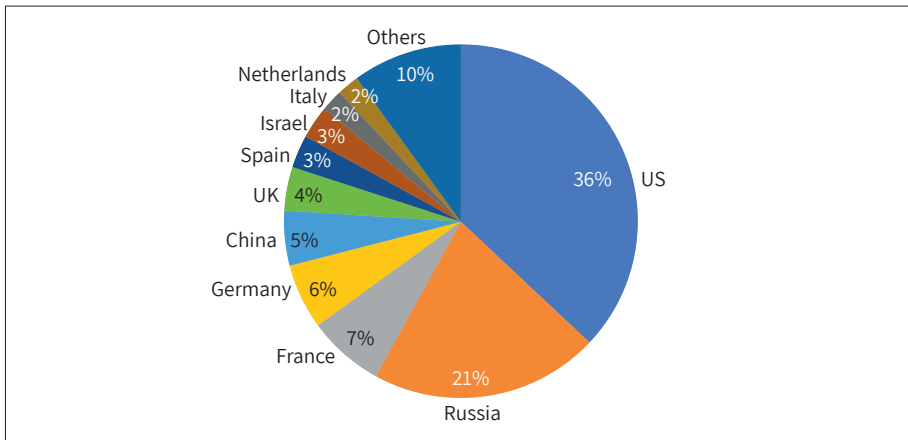
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The development of the defense industries in Israel has been characterized by radical and sometimes contradictory changes. They were built to serve local military needs, yet in recent decades the bulk of their activity does not involve supplying the Israel Defense Forces (IDF). Initially, the defense industries' role was derived from restrictions imposed by foreign governments on the supply of weapons systems and military equipment to the IDF. Later, however, following the United States' willingness to extend military assistance to Israel, including monetary grants to pay for the imported goods, that role changed and its development took a different course. Defense exports began as a secondary business, mainly in order to balance domestic demand fluctuations and to lower research and development (R&D) and production costs for the IDF. In time, exports grew so rapidly as to place Israel among the world's largest defense exporters. Somewhat paradoxically, the earlier dependence on foreign suppliers has been replaced by a dependence on overseas customers. Up until the 1980s, the defense industries retained important direct influence on the development and structure of the Israeli economy, but since then their relative share has declined and they no longer constitute an influential economic actor.

Now, at the beginning of the third decade of the 21st century, it would be appropriate to open-mindedly re-examine what role Israel's defense industries can and should fulfill in the coming years.

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**Figure 1:** Global Defense Exports 2014-2018

### Transforming the Balance between Roles

The mainstream explanation of defense economics for the development of defense industries<sup>1</sup> is that at early stages countries invest in the building and development of their defense-industrial base (DIB) for strategic and political reasons, i.e., to meet genuine and perceived defense needs, to avoid dependence on military supplies from other countries, and to obtain leverage in political bargaining and promote the country's position in the international theater. With time, however, strategic and political motives are supplemented by economic and technological incentives. Countries consider the defense industry as a stimulus for economic growth, a focus of industrial development, a framework for professional training of the local labor force, and a source of technological innovation for other sectors in the economy. Countries have also expanded their defense production to provide high-quality employment and strengthen their balance of payments. The economic role gradually gained standing in the national order of priorities, and the original defense production was no longer seen as merely fulfilling a strategic role. Indeed, strategic needs and economic considerations are not always compatible; there is sometimes inherent tension, and even contradictions, between them. The policy set by countries concerning the size of their DIB, its composition, and the directions of its development therefore aims at achieving an appropriate balance between fulfilling defense requirements and favorably contributing to the economy.

In the post-Cold War era, certain processes emerged that altered the balance between roles that characterized the defense industry in previous decades. Reduced defense spending and decreasing demand for security products and services led to an unprecedented wave of mergers in the industry, mainly in the 1990s, leading to increased concentration and less competition. In some countries, this consolidation was accompanied by privatization. The new corporate giants were large in comparison with government procurement budgets (except in the United States), and soon became eager to expand their foreign sales. For their part, governments had to accept some corrosion of their traditional influence on the domestic DIB.

Another major process, the internationalization of the defense industry, had similar consequences. Defense industries once operated within national boundaries. After the Cold War and in the globalization era, however, borders – even of the DIB – became blurred. Internationalization manifested itself in the growing share of export sales, and also in acquiring holdings and/or establishing subsidiaries overseas, in globalization of the supply chain, joint ventures, and other forms of collaboration between firms from different countries. For companies, internationalization creates opportunities, but at the same time it can have an eroding effect on their dominance in the domestic market. In any case, linkages between companies and their home economy become looser. For governments, most of them admittedly view internationalization as an inevitable development, even though it further diminishes their influence on the DIB in their countries.

Additional trends that influenced the balance between the two competing roles of the defense industry were a narrowing of the distance between defense and civilian industries and the growing reliance of the defense establishment on outsourcing and on purchasing services from private military companies. In recent decades, defense production has increasingly relied on dual-use technologies developed in the civilian sector and on commercial off-the-shelf components. One of the motives for this was to find ways to curb the ongoing rise in the unit costs of weapons systems and other military products. A no-less-important catalyst, however, was a change in the direction of interrelations between civilian and military technologies. Up until the 1980s, developments in military technology spearheaded technological developments in the civilian sector, and the defense industry was perceived as a source of technological innovations spilling over and benefiting the entire

economy. Later, the pace of innovation in the civilian sector accelerated, and in certain areas – particularly electronics, communications, and information technologies – the roles were reversed: the civilian sector took the lead in cutting-edge technologies, prompting the defense industry to focus on “spill-ins” – that is, on ways to exploit civilian technologies for military uses.<sup>2</sup> Under these circumstances, one of the main channels through which defense R&D and production contributed to the economy lost much of its importance. Furthermore, the civilian high-tech industry knows no borders, and the supervision of technology transfers between countries, including civilian-developed technologies that are used for military purposes, is very difficult, and sometimes impossible. Consequently, the defense industry might lose some of its strategic importance too. Indeed, its adoption of civilian-developed technologies that cannot be kept away from foreigners’ reach considerably restricts the ability to fulfill strategic roles.

The magnitude of outsourcing has grown rapidly. This has been coupled by extraordinary diversification in purchased services, extending even to services supporting actual combat that are provided in conflict zones. The accelerated growth of outsourcing was mainly a response to the downward trend in defense budgets, the assumption being that outsourcing would make it possible to release budget resources, whether by spreading spending over a longer period or through savings achieved due to the greater efficiency of commercial enterprises. In any event, it added new actors to the circle of defense ministries’ suppliers and brought about significant change in the traditional features of the DIB. The relatively restricted club of well-established companies developing and manufacturing complex and technology-intensive systems and equipment, while maintaining special symbiotic relationships with the military customer, is giving way to a diverse assortment of entities, including ad hoc combinations of firms with different expertise,<sup>3</sup> having looser relations with the military customer, on the one hand, and offering non-typical elements – e.g., long-term financing – on the other.

The balance of the defense industry’s roles is naturally also greatly affected by changes to the “threat map.” A nuclear conflict between rival powers or large-scale conventional interstate wars have become far less likely than ever before; they have been replaced by the threat of low-intensity conflicts of various types, intrastate and transnational, most of which are asymmetric in nature, between sovereign states and non-state entities. In parallel, concerns

regarding the proliferation of weapons of mass destruction – the development of nuclear capabilities by countries and the spread of non-conventional weapons to various organizations – have grown. Due to these changing threats, a large proportion of the arsenal accumulated during the Cold War is unsuitable for today's tasks, and correspondingly capabilities that formerly gave leading companies advantages have become completely irrelevant. Meanwhile, demand has risen for the R&D and production of new products, some of them based on technologies rarely applied previously to military uses, and for other products that are available from small manufacturers operating under competitive conditions.<sup>4</sup> The strategic role, responding to unclear threats and diverse possible scenarios, and to rapidly changing operational requirements, has thus dictated a different approach to that which prevailed during the Cold War. In particular, a new approach to R&D and production was needed that would significantly shorten the time lag between an emerging idea and its realization through full deployment in the order of battle. Priority has been given to flexible R&D and production systems offered by “lean” companies that rely to a large extent on outside suppliers and subcontractors.

In short, developments in the past three decades have led to two main conclusions about the defense industries' roles, and the balance between them. One is that their economic role has waned, particularly due to the looser ties between them and their home economy, because of the reversal of technological innovation flows, and as a result of the erosion in governments' influence on the DIB in their countries. The second conclusion is that, in certain areas, gaps have emerged between the desired and the actual capabilities of the DIB, possibly impairing the ability to provide an optimal response to current strategic needs.

### **The Defense Industry in Israel: Milestones**

Over the years, the balance between the strategic and economic roles performed by the defense industry has changed in Israel, as it has elsewhere. Furthermore, significant changes have also occurred within the strategic roles.

In Israel's early years, it encountered political difficulties in acquiring military weapons and equipment from abroad,<sup>5</sup> and so adopted a dual approach to procurement: maximizing opportunities for overseas procurement, if any, on the one hand, and investing extensive resources in building a local

defense industry, on the other. The domestic defense industry was thus perceived primarily as a release from absolute dependence on foreign supply sources. An inverse relationship therefore existed between the availability of procurement opportunities from abroad and the importance attributed to strategic independence, and hence to the domestic defense industry and the tasks it was called on to perform. Up until the Six Day War in 1967, in addition to production of light weapons, ammunition, and spare parts and maintenance work, Israel developed an impressive production capacity in renovating, converting, and upgrading weapons, successfully applying it also to new weapons systems procured overseas. As long as Israel had regular supply ties with France, however, local production for defense remained relatively limited in scope. But the situation completely changed when France ceased to provide supplies, and imposed an embargo on arms transfers to Israel. No alternative sources of procurement could be found, the defense industry's tasks expanded substantially, and domestically its importance in ensuring strategic independence grew. In particular, the domestic defense industries were called upon to supply the IDF with major weapons systems, and they began to develop and produce a fighter aircraft, a main battle tank, missile boats, and various types of missiles. Yet later, when Israel was offered the option of buying arms and military equipment in the United States, the importance of independence gradually waned again, and the priorities in the strategic roles of the defense industry changed. An important moment was the decision in 1987 to halt the development and production of the new Lavi aircraft and to reallocate some of the resources to substitute programs. This reflected a policy that assigned secondary importance to independence, especially where platforms for major weapons systems were concerned, emphasizing instead the notion that the domestic defense industries should supply the IDF with a range of "force multipliers" by means of original and unique technological solutions.

The use of advanced technologies and original development was not new in itself. Indeed, domestic R&D and production had always followed the IDF's actual operational needs, attempting to respond to them with original solutions. At first, technology and original developments were regarded as a way of attaining arms with superior, or at least equal, capabilities to those of the enemy. Starting in the 1970s, technological options also assumed a central role in implementing doctrinal changes: not merely improving

arms performance within the framework of existing military doctrines, but influencing the way military forces conduct operations, which in turn affected force structure, the type of equipment to be used, and eventually the scope of operational objectives that might be accomplished.<sup>6</sup> The growing reliance on advanced technologies and innovative self-development was supported by two complementary trends. The first was the diversified industrial base that meanwhile was expanding in Israel, demonstrating advanced technological skills, thereby dispelling earlier doubts and reinforcing recognition of the industry's ability to offer innovations that might serve the IDF as force multipliers. The second trend was revealed in the global arms market; it turned into a buyers' market, making weapons manufacturers more willing to offer innovative systems, including systems based on advanced technologies. Apparently, only unique self-development of products not available for sale in the global arms market that could be concealed until used on the battlefield was capable of granting surprise advantages, which could prove to be decisive.

**Table 1:** Ranking of the world's 100 leading defense companies and their sales volume in millions of dollars, according to the Stockholm International Peace Research Institute (SIPRI)

Company	2002	2010	2017
Elbit Systems	45 (860)	40 (2,480)	28 (3,220)
Israel Aerospace Industries	27 (1,260)	41 (2,400)	41 (2,480)
Rafael	51 (720)	55 (1,780)	45 (2,210)
IMI	92 (350)	–	–
Elisra	93 (350)	–	–

**Source:** SIPRI

Significant changes have also taken place over the years in the defense industry's contributions to the Israeli economy. Domestic defense production expanded rapidly after the Six Day War, thus establishing the defense industry as an important factor that had tremendous influence on macroeconomic

developments and structural processes in the economy over the ensuing two decades. Among other things, its accelerated growth played a key role in the exit from the mid-1960s recession in Israel; in creating employment opportunities for scientists and engineers who immigrated to Israel in the early 1970s, mainly from Western advanced industrial countries; in launching structural changes by raising the share of high-tech industries in the economy; in promoting geographic distribution of the industry through the establishment of new plants in development areas; and in improving the quality of manufacturing industries to meet the high standards required in defense production. During this period, the share of defense exports in overall industrial exports quadrupled. In other words, defense exports became a significant component of Israel's balance of payments, and a valuable source of foreign currency for the economy. But in the 1990s things changed: growth in the defense industries came to a halt and their activity declined, while the economy as a whole grew relatively quickly, at extraordinary rates in some years. The balance of payments improved, with Israel becoming a creditor rather than a debtor economy, accumulating large foreign currency reserves in the first decade of the 21st century. By all measures the share of the defense industry in the economy fell, and it no longer can be perceived as maintaining any special macroeconomic importance.

Where structural effects are concerned, it would be impossible to exaggerate the importance of the contribution made by the defense sector – the IDF and the defense industries – to Israel's moniker as the “start-up nation.” But, as in other developed countries, things have also changed in Israel, and most of the civilian high-tech industry is no longer linked to or currently influenced by defense-related activities.

### **What Kind of Defense Industry Does Israel Need?**

Based on the relative weight of the defense industry in the economy and in industry in the 2020s, it is still an important economic sector, but it is not expected to play a significant macroeconomic role. In other words, economic growth, the level of employment or soundness of the balance of payments are unlikely to be greatly affected for better or worse by contemporary trends in the defense industry. Defining the desirable DIB is therefore free of macroeconomic considerations, or at least does not have to regard such considerations as decisive, especially when they conflict with defense needs.



The parameters of the defense industry that Israel needs at this time should be determined by an in-depth assessment of the security threats facing Israel, on the one hand, and the industry's potential contribution to reducing them, on the other. Security threats are often divided into three categories: terrorist threats against the home front and against overseas targets identified with Israel; conventional conflicts at varying levels of intensity with neighboring enemies, both state and non-state; and remote threats from an enemy with which Israel has no common border (threats that are liable to include the use of non-conventional weapons). The defense industry may contribute to dealing with the various threats in several ways: guaranteeing the IDF's technological superiority through the development and production of force multipliers based on advanced technology; promoting independence, continuity of supply, and a degree of freedom in the use of military systems; and enhancing deterrence. The threats are all serious, but their degree of severity varies. Similarly, all the contributions that the domestic industry is likely to offer are important, but their relative effectiveness against each type of threat is not the same. Also, the technological and industrial capabilities for offering solutions for dealing with the threats – whether existing capabilities or those that can be developed within a reasonable time and at reasonable cost – are not necessarily identical.<sup>7</sup>

A systematic review of the above array of considerations may lead to surprising conclusions, namely, a not obvious ranking of the roles that the domestic defense industry must fulfill. For example, remote threats (mainly the Iranian nuclear program) are regarded as extremely grave, yet the potential contribution of the domestic defense industries for coping with these particular threats is limited. Although technological superiority and independence in the supply and use of military systems rank relatively high on the scale of effectiveness, with respect to capabilities, despite considerable progress in anti-missile defenses, satellites, etc., there are still wide gaps. Essentially, these capabilities belong to the playing field of major powers, and narrowing the gaps, if at all possible, involves enormous cost and time. In addition, lack of adequate capabilities renders the deterrent effect ineffective. All in all, the severity of the remote threats notwithstanding, coping with them cannot be ranked as a top priority of the domestic defense industry, and thus this remains a secondary consideration in shaping the desirable DIB.

Terrorist threats, on the other hand, may be regarded as less severe, but taking into account effectiveness and capabilities, the roles of the domestic defense industry in coping with them are of the greatest importance. The industry's existing technological level and industrial skills can offer solutions that will limit such threats to bearable proportions. At the same time, terrorism is elusive and unpredictable, and is liable to appear in new unknown forms. A rapid response capability is therefore needed, and no less important, the option to use counter-terrorism means free of restrictions that foreign supplies might include. Evidently, the domestic defense industry has clear advantages in this regard.

To summarize, the roles that the domestic defense industry must fulfill and their relative importance are derived from the gravity of the threats, the effectiveness of the response, and existing capabilities or capabilities that can be developed within a feasible time and at a reasonable cost. Naturally, different people may have different assessments of each of the variables in the equation, thereby reaching different conclusions regarding the desirable DIB. Furthermore, the gravity of the various threats is liable to change from time to time, as is an evaluation of the relative effectiveness of the defense industry's potential contribution to dealing with them. Finally, all these variables should be reassessed periodically to better understand the shifting role of the defense industries in Israel.

## Notes

- 1 The mainstream school of defense economics follows the neoclassical approach, which perceives the development of the defense industry as an outcome of rational choice and optimal allocation of resources. Another interpretation, the "military-industrial complex," adopts the political economy line of thought, attributing the development of the defense industry to the effect of the overlapping interests of the armed forces, the civilian bureaucracy of the defense establishment, politicians, arms manufacturers, defense industry employees, and even the scientific community.
- 2 An important milestone was in the early 1990s, when the US Department of Defense allowed military projects to use civilian components, stating that adjustments to military environment requirements would be made mainly at the system level, rather than at the individual component level.
- 3 In many cases, outsourcing agreements demand comprehensive solutions, including systemic planning, production and maintenance of equipment, construction, logistics services, training, etc.

- 4 For example, combating terrorism and initiatives to enhance homeland security have boosted the demand for technologies such as life science, pharmaceutical etc., as well as for security scanning machines, various alarm devices, and so forth, that can be readily acquired in civilian markets.
- 5 In 1947, the UN Security Council imposed an embargo on weapons deliveries to the Middle East. This embargo was replaced by the “Tripartite Declaration” of 1950 whereby the US, the UK, and France undertook to refrain from supplying arms to the rival countries in the region.
- 6 The pioneering example belongs to the navy. The missile boat, which combines precision-guided armaments (the Gabriel sea-to-sea missile) and various electronic warfare systems, was a new technological development that fundamentally altered the navy’s combat doctrine and expanded its operational objectives. Thanks to the missile boats, Israel attained naval supremacy in the Yom Kippur War. Later, following lessons learned from that war, mainly about attaining air supremacy, the air force developed a new operating concept that also relied on innovative technological developments that included precision-guided armaments, electronic warfare, and command and control systems. The complex combination of all these advanced measures made a decisive contribution to the destruction of the Syrian ground-to-air missile batteries in Operation Peace for Galilee (the First Lebanon War) in 1982.
- 7 The industry’s potential contribution is measured by multiplying the attributed degree of effectiveness and the level of technological and industrial capabilities for each category of threats.