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Is Israel the “Start-Up Nation” Because of Its Unique Security Situation?

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EXECUTIVE SUMMARY: In its early years, the State of Israel made major investments in science and technology in alignment with its national security strategy of establishing a qualitative advantage over its adversaries. This initiative positioned Israel's defense sector as the driving force behind its technological progress. Over time, Israel's focus has shifted toward civilian-commercial technology, earning it the nickname “Start-Up Nation”. Upon examining the unique continuing dynamics between Israel’s thriving commercial hi-tech sector and its defense sector, it becomes evident that Israel's security situation remains the fuel that powers the country’s bustling start-up ecosystem.

The State of Israel is unique in that it enjoys significant economic growth while maintaining one of the highest defense burdens of any country in the world. The reason for the high defense expenditure is that Israel has been engaged in a fight for its very existence from the day of its formation. Concurrently with the ongoing threat, Israel’s economy grew rapidly, averaging around 4% annual growth over the last two decades.

Israel's growth strategy is directly tied to investments in research, development and technology. Science and technology have always been perceived by Israel as key factors in the power equation between itself and its surrounding adversaries. Israel’s expenditure on research and development as a proportion of GDP is one

of the highest in the world at approximately 5%. The country's emphasis on science and technology is evident in the high density of scientists and engineers within its population, which easily competes with that of any developed European country.

In its early years, Israel attempted to address its pressing security challenges by developing a national security strategy that emphasized qualitative parameters to neutralize the quantitative gaps vis-à-vis the surrounding enemy states. David Ben-Gurion, the first prime minister and minister of defense, articulated soon after the establishment of the state that due to Israel's numerical inferiority, it must strive for qualitative superiority. Israel identified science and technology as critical for the accomplishment of this strategy.

Ben-Gurion further asserted that scientific research and technological development were essential not only for security needs but also for the development of Israel in terms of agriculture, industry, and education. His plan was to enlist the best scientific minds of the Jewish people and to motivate young scientific talents to dedicate their lives to scientific research. They were to be provided with advanced equipment and well-equipped laboratories in fields such as physics and biology with the expectation that they would align their research efforts towards the security and development of the country.

Given that "big science" involves long development cycles, high uncertainty, substantial risk, and a considerable chance of failure, engaging in extensive private-commercial science and technology projects without state intervention was exceptionally challenging, if not impossible, in the initial decades of Israel's existence. The necessity for government funding stands out as a primary obstacle for smaller nations seeking to cultivate such capabilities. However, despite the challenges it faced and its status as a small state, Israel managed to overcome these barriers, successfully constructing and advancing a significant technological infrastructure. Israel attributes much of this success to making technological superiority a cornerstone of its national security strategy, which led in turn to the establishment of a well-developed and technologically advanced defense sector.

The end of the 20th century saw a dramatic change in the world's technological landscape. State-owned technological innovation led primarily by the defense

sector shifted towards innovation led by the entrepreneurs and investors of the private sector, establishing what we know today as the start-up age. Today, annual investment in commercial startups worldwide is significantly higher than investment in defense R&D. The private commercial sector dominates technological innovation and the defense sector often “feeds” on these innovations for its own applications, rather than the other way around.

Following this shift in technological dominance and leveraging its highly developed science and technology infrastructure, Israel has managed to position itself as a global source of technological innovation and business entrepreneurship, and is often referred to accordingly as the "Start-Up Nation". Israel has many hi-tech companies listed on the NASDAQ, the second-largest stock exchange in the world after the NYSE. Israel’s presence on the NASDAQ is second only to that of the United States and China. As of the end of 2022, there were over 130 Israeli companies listed on the NASDAQ, which is comparable to those of the British, French, and German companies on the exchange combined.

In the last decade, Israel's investment in research and development has been the highest in the world relative to GDP by a significant margin. Additionally, Israel's venture capital fundraising rate is among the highest globally on a per capita basis, and the success rate of its unicorn companies is particularly high. Between 1999 and 2014, approximately 10,000 start-up companies were established in Israel, with 2.6% achieving an annual profit of at least \$100 million. In the Global Competitiveness Report for 2018-19, which ranked 141 countries, Israel was first in entrepreneurial culture and second in availability of venture capital. In 2021, investments in Israeli startups reached an unprecedented peak of \$26 billion.

Given this context, it might seem reasonable to argue that aligning Israel's highly developed technological ecosystem with its unique security context may have been relevant in its early decades but has grown less so with time. This might appear on the surface to be true, as Israel’s economy seems to have extricated itself over the last few decades from the clutch of the defense sector and transformed the country into the “Start-Up Nation” it is today.

But the argument is inaccurate, as the connection between the Israeli hi-tech industry and the Israeli defense sector remains robust. To appreciate why, we need to delve into the Israeli technological ecosystem.

The ties to the defense system, particularly to the IDF, play a pivotal role for the Israeli hi-tech industry. In Israel, most citizens undergo mandatory military service, and after their discharge, many continue on active reserve duty. There is thus a continual interaction between the Israeli civilian and military domains.

This ongoing connection significantly empowers entrepreneurs serving in the IDF's technological units to introduce novel technologies and devise solutions that can benefit the defense system. These entrepreneurs possess an in-depth personal understanding of that system and can identify its needs, weaknesses and vulnerabilities. They utilize the training and extensive knowledge they acquired during their military service in the development process to great effect.

In the Israeli hi-tech sector, many of the start-up companies specializing in intelligence and cybersecurity are predominantly staffed by graduates of military technological units like Units 8200 and 81. These start-ups are involved in advancing defense-related technological projects, delivering training to defense entities, and providing prompt responses to the system's operational needs. In many cases, the products offered by these companies are not generic but are meticulously tailored to meet specific operational requirements. Many projects undertaken by these companies are at the forefront of technological advancement.

To comprehend just how profound is the influence of this phenomenon on the Israeli hi-tech industry, we should examine the two units mentioned above, 8200 and 81. In the late 1990s, the IDF recognized the pivotal role of the cyber domain and took on the challenge of identifying and training suitable human resources. The IDF accordingly instituted unique advanced selection processes to recruit high-quality personnel. The innovative training program and courses transformed these young recruits into true experts in their fields.

Between 2003 and 2010, 100 or so officers and soldiers who completed their service in Unit 81 established around 50 start-up companies, collectively raising over \$4 billion. Many of these companies continue to yield substantial revenues, and some have achieved successful exits. Unit 8200 was a major contributor to the emergence

of many cybersecurity companies, including the legendary Check Point; Adallom, acquired by Microsoft for \$320 million; and Armis, acquired by Accenture for \$1.1 billion.

More than 1,000 start-ups have been founded by 8200 alumni. Its graduates are involved not only in cybersecurity start-ups but in many other fields as well, ranging from Waze to Wix to SolarEdge. These examples represent only a small fraction of the broader trend. It is no exaggeration to assert that graduates of these units have significantly shaped the Israeli hi-tech sector over the past decade. These units are a true powerhouse propelling the Israeli hi-tech sector, with a significant portion of the technology they develop flowing back to defense applications.

When analyzing the unique relationship between the IDF and the private commercial hi-tech sector in Israel, we can see that Israel's unique security situation has created a mechanism through which both parties are so interwoven as to make it difficult at times to tell them apart. It is in Israel's best interest to continue to nurture this unique relationship, which is beneficial for Israel's prosperity as well as its security.

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