The Decline in the Number of New Startups

Update with 2021 Data

# Introduction

In April 2022, together with the Israel Innovation Authority, we published a study on the decline in the number of new startups launched in Israel. The study focused on 2014-2020 and indicated an average annual decline of 9.4% since 2017.[[1]](#footnote-1) Since data on the establishment of new startups are received with a delay of months to years, we did not include 2021 in the original analysis. Now, following a further half-year of measurement, the accumulated data have enabled us to more precisely estimate the pace of launching new companies over the past year, and consequently, and specifically in view of the worrying trend, we have chosen to publish an update to the original study.

According to Start-up Nation Finder data[[2]](#footnote-2), only 417 startups were founded in 2021. Even when we take into account the fact that some of the new companies founded have yet to be discovered, this still represents

Figure 1: The number of startups founded each year according to the Start-up Nation Finder database (blue), an estimate of the number of startups founded during that year that have yet to be discovered (red), and the estimate’s statistical error (black).

a decline of 23% compared with 2020. The average annual rate of decline since 2017 stands at 11.3%, so that last year’s decline is the harbinger of a deterioration in this trend.

Data on the establishment of new startups tend to arrive with a time-lag. The Start-up Nation Finder database locates new companies by monitoring a broad variety of sources of information, yet many companies prefer to “remain under the radar” during their early stages, so that in historical terms, only 37% of companies are discovered during their founding year, and a further 35% during the following year. In order to contend with this problem, we developed a model that estimates the number of companies yet to be discovered at any point in time.[[3]](#footnote-3)

Now, with the aid of the 2022 data, we can compare the forecast of the original model with the actual measured data. As can be seen in Table 1, the model succeeded in providing an extremely precise forecast of the rate of discovery. This result serves to reinforce the model’s reliability, along with our confidence in the fact that the number of new companies launched in 2021 is indeed, extremely low.

Table 1: Model for forecasting the number of new startups

|  |  |  |
| --- | --- | --- |
| Founding year | Discovered in practice during 2022 | The original model’s forecast |
| 2014 | 0 |  |
| 2015 | 8 | 4.7(± 4.2) |
| 2016 | 2 | 13.4(± 7.3) |
| 2017 | 18 | 17.6(± 9.0) |
| 2018 | 35 | 32.9(± 10.5) |
| 2019 | 49 | 51.2(± 12.9) |
| 2020 | 109 | 95.4(± 16.8) |
| 2021 | 196 | 210.7(± 34.8) |

Table 1: For each founding year, the number of companies discovered in practice by the Start-up Nation Finder team during 2022, and the model’s forecast (estimated without the 2022 data) regarding the number of companies expected to be discovered during that period.

# Key hypotheses for the decline: revisiting the assumptions

In the original report, we raised a number of potential hypotheses to explain this phenomenon of decline, and we brought proof to support or refute them. Now, we seek to revisit those hypotheses and to examine how the new data have an impact on the analysis.

## An increase in quality

One of the hypotheses examined is the possibility that the decline in the number of startups signifies an improved capability of investors and entrepreneurs to estimate in advance the chances of success of high-tech ventures. According to this hypothesis, we would expect to see less startups per year, but with greater chances of success.

As an approximate measure of startup quality, we measure the number of companies succeeding in raising initial investment (seed rounds and beyond) within a given period. In the original report, we showed that according to this metric, we can find no significant or methodical difference in the quality of the startups according to their founding year: In each period we selected, the percentage of companies that succeeded in raising funds remained similar over the years. Even when you adjust the data for the companies founded (and which have raised funds) in recent years, the picture remains largely unchanged. Just as in the original report, we can still find no evidence to back up the claim of an increase in quality.

Figure 2: This figure presents for each founding year (2014-2021) the percentage of companies receiving seed funding as a function of the company’s age. For example, we can see that for companies founded during 2019 (the yellow line), about 18% received funding within a year of their establishment, and 26% within two years of their establishment. The graph illustrates the fact that the percentage of companies succeeding in receiving funding within a given period of time from their establishment has not substantially changed throughout the entire period.

## Technological developments create a scale bias

An additional explanation we examined was the possibility that the technological advancements of recent years have caused the startups currently being launched to be larger right from the outset. We found evidence to support this hypothesis in analysis of the decline in the 2014-2020 period according to sector. We found that the major part of the decline occurred in the SMA (Social Media & Advertising) sector, one that is characterized by projects that fall completely in the realm of pure software and require only scarce resources during the initial stages, both in terms of personnel and equipment. In contrast, we saw no similar declines in sectors such as AgriTech, Digital Health, and so on, where ventures frequently require various professionals (agronomists, physicians, laboratory technicians), together with expensive equipment.

Yet, the pattern according to which the declines tend to mainly occur in the software-intensive sectors did not continue in 2021. The updated data indicate a decline in almost all sectors (Figure 3), with declines occurring even in such sectors as Life Science & HealthTech, and on occasions even with higher-than-average rates.

Figure 3 - the number of new startups launched in each year according to sector (without correction for time-lagged data).

Moreover, based on new data we collected from social media, which represent a large sample of high-tech employees,[[4]](#footnote-4) we are now able to examine this hypothesis in relation to the number of employees. For all the companies in the sample that were founded in a certain year we measured the number of workers in the sample who worked at the company one year after its founding date, and we created an index representing the change in the number of workers per startup according to founding year. The results appear in Figure 4. We found that for companies founded in 2020-2021, the number of workers employed one year after their establishment was 27% higher than the figure for companies founded in 2014.

This result goes to support the hypothesis regarding technological advancements creating a scale bias. On the other hand, we should point out that the increase in the number of workers is still low in comparison to the decline in the number of startups. Figure 4 portrays the total number of workers in startups one year after their initial establishment (the product of the number of workers in the average startup and the number of startups) and shows that this particular statistic has been on the decline since 2014 (apart from 2020), and from 2014 to 2021 it declined by a total of some 30%.

Figure 4: Measures of change in the average number of workers in startup companies one year after the company's date of establishment according to the company’s founding year (blue), and the total number of workers in all the companies one year after their establishment (red). See detailed explanation in the body of the report.

On the whole, we can find certain evidence to support the hypothesis regarding the fact that technological developments create a scale bias, but we must admit that this process only partially explains the phenomenon.

## Competing with larger companies for resources

In recent years, we have witnessed a significant increase in the number of large companies operating in Israel. Whether these are R&D centers of multinational corporations, or Israeli growth companies, the Israeli high-tech market is replete with large companies competing for the same human capital resources with the younger startups. In the original report we noted that this competition also raises the opportunity cost for entrepreneurs, and it also makes the cost of founding a startup much more expensive due to the high wages of the R&D workers and others.

Figure 5 depicts the wage spikes in the high-tech sectors between 2014 and 2021. According to the Central Bureau of Statistics (CBS), during this period there was a 4.5% annual rise in wages, creating a total rise of 36% since 2014. In 2021 there was a 6.3% rise in wages. We should point out that the CBS definitions for high-tech are different to those of the SNPI, and in practice, we estimate that the actual rise in wages was even higher than this.

Figure 5: The high-tech (according to the CBS definitions) wage spike between 201-2021 (SNPI adaptation of the CBS data).

Figure 6 depicts the wages in the high-tech industry (again, according to the CBS definitions) compared with the number of new startups. The correlation certainly does not indicate any causality, but it is hard to ignore the almost linear connection between these two variables (Coefficient R Squared of 93%). It is difficult to avoid the conclusion that a similar process is simultaneously driving the wage spike and the decline in the number of startups, and this process is probably directly connected to the growing, ever-fierce competition over relevant human resources.

Figure 6: The number of new startups (Finder data) compared with the wages in the high-tech industry (CBS data). 2014=100.

## Changes in investor preferences

Is the decline in the number of startups the result of a decline in the scope of investment or the number of investors? Figure 7 shows that this is not the case, and that in practice the number of investors investing in pre-seed or seed rounds has been on the rise in recent years. These data, alongside a record figure of $27 billion in investments in Israeli startup companies in 2021, show that it is difficult to point to a problem in relation to investments.

How can we reconcile these opposing trends? Figure 7 shows that in recent years, the average number of investors participating in each pre-seed and seed round reached a record of 2.65, an increase of 40% since 2014. Alongside these data, the increase in the volumes of external investment over the years, might, among others, be indicative of surplus supply, or an increase in the amounts of investment required for the establishment of startups (due to the wage spikes or the cost of inputs, etc.).

Figure 7: The number of unique investors in seed rounds per year (according to investment year) according to a breakdown of venture capital funds and angels; and the average number of investors per investment round.

# International comparison

Before completing this report, we would like to provide an update by comparing the phenomenon of decline in Israel with that of the high-tech centers in Silicon Valley and London. In Figure 8, we present data from the Pitchbook database regarding these centers. In contrast to the data we presented above, these data do not contain corrections for the time-lag in locating the startups, so that the trend of decline is accentuated, and in the future it will apparently be mitigated. Nevertheless, comparison of these centers shows that the decline in the number of new startups remains an international phenomenon, and the timing of the declines too is similar among these three centers.

Figure 8: Establishment of new startups in Israel, Silicon Valley, and London. Pitchbook data. These data do not contain any correction for a time-lag in receiving data.

# How will the global recession affect the trend of decline?

The Israeli high-tech industry, similar to the global high-tech industry and the global economy, has in recent months been forced to contend with tremendous uncertainty and plummeting stock markets. How will this change of direction affect entrepreneurs, especially if the trend of startup decline comes to a halt? This is difficult to estimate, as a number of different economic forces could be in action here with various impacts on entrepreneurship in Israel:

* The increase in layoffs and the cooling off in the high-tech labor market might lead to a rise in the number of entrepreneurs (those that have been dismissed) and make it easier for new startups to onboard skilled workers. Many workers who have already succeeded in realizing blocked options and shares, and who have undergone secondary rounds in the months preceding the crisis, might decide to chance their hand at entrepreneurship. The slowdown in the establishment of R&D centers by multinational corporations might also contribute to the growth in the proclivity toward entrepreneurship (assuming that this slowdown will also lead to a concomitant slowdown in the recruitment of new staff by these companies).
* On the other hand, potential entrepreneurs might be risk averse at this time of market instability and may well prefer the safer option of working as salaried employees. This is especially so in light of the waning level of investments and the growing concern of the investors.

# Conclusions & recommendations

We believe that **the continued decline in the number of startups is a problem that we can no longer afford to ignore**. Having said that, even now we still believe that there is no “correct number” of new startups per year, but an average decline of 20% for four consecutive years is pushing the Israeli high-tech industry toward problematic risk margins. Furthermore, the expansion of the trend of decline into numerous sectors is a clear indication that there is an industry-wide decline in entrepreneurship in the Israeli high-tech industry.

The decline we have described here is largely “going unnoticed” as the economic impact of startups is relatively limited in the short term. They do not employ a large number of workers, and they are usually before the sales stage; and thus, they do not pay much tax. However, startups are the basis of the Israeli high-tech industry, and they are the seeds from which the growth companies and the complete companies will develop in the years to come.

In contrast to the study published in April, which stated that there is no room at this juncture for a change in government policy, the new data have caused us to change our recommendation. In particular, we believe that the government must prepare and implement as soon as possible, an incentive plan to boost technological entrepreneurship, among others, by examining the following steps:

* **Increasing the Israel Innovation Authority’s budgeting of support plans for startups, and especially the Ideation (*Tnufa*) Incentive Program, and the Early-Stage Companies Incentive Program.** The Authority's policy must adapt itself to the problems affecting the ecosystem especially as the decline in entrepreneurship would appear to be an ongoing problem. Accordingly, with a view to the 2023 budget, we recommend prioritizing the startups’ portion within the total amount of grants awarded by the Authority.
* **Increasing the budget ceiling per worker in the Israel Innovation Authority’s grants for technological employees in high-tech companies.** The current wage ceiling for support awarded by the Israel Innovation Authority stands at NIS 30,000 (cost of salary). We believe that this ceiling should be increased to NIS 40,000 for startups. At the same time, it is advisable to look at the possibility of updating the maximum budget for startup support (this currently stands at NIS 3.5 million), so that this rise should not become a zero-sum game together with other components in the Authority grant.
* In a similar manner **– increasing the grant ceiling in the Ideation (*Tnufa*) Incentive Program to NIS 300,000** (currently NIS 100,000). The Ideation (*Tnufa*) Incentive Program is designed to support fledgling entrepreneurs as they start out. We believe that increasing the ceiling should provide a better incentive to "serious” entrepreneurs while concomitantly facilitating the natural filtering of less serious entrepreneurs.
* **Encouraging and increasing budgeting for the entrepreneurship programs run by the universities and colleges.**

1. The decline measured was an average annual rate of 14% in the raw data, and a rate of 9.4% after correction for the delay in locating new startups (see below). [↑](#footnote-ref-1)
2. In order to be considered an Israeli high-tech company, it is necessary to meet all three of the following conditions:

   * The company must have an Israeli entrepreneur;
   * The company must be in possession of a technological asset or be developing a technological product;
   * At least some of the development team must be physically present in Israel (but not merely the sales office).

   [↑](#footnote-ref-2)
3. See Appendix 1 in [the original report](https://startupnationcentral.org/wp-content/uploads/2022/04/SNC-Decline-in-startups_report_V10.0.pdf). [↑](#footnote-ref-3)
4. For an explanation on the sample of workers, see the Methodology Chapter in the [Human Capital Report](file:///C:\Users\dbiran\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\5IS488U1\t.ly\6IRI) of SNPI and the Israel Innovation Authority. [↑](#footnote-ref-4)