

Israeli High-Tech Human Capital Report:

2022-2023 Snapshot



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Partners



SNPI is an independent, non-profit think tank that focuses on innovation policy and the Israeli innovation model. It is led by Israel's foremost experts in innovation policy, legislation, and ecosystem building, and its mission is to enhance the Israeli technology ecosystem and guide global policymakers and organizations in crafting innovation policies based on the Israeli model.



Israel Innovation Authority, responsible for the country's innovation policy, is an independent and impartial statutory public entity that operates for the benefit of the Israeli innovation ecosystem and Israeli economy as a whole. Its mission is to invest in innovation in order to promote sustainable and inclusive growth. It provides a variety of practical tools and funding platforms aimed at addressing the dynamic and changing needs of the local and international innovation ecosystems.

For more information, visit our site: www.innovationisrael.org.il/en



Zviran is one of Israel's leading companies for consulting on salary data, benefits, pensions, employer insurance, and human capital processes. For over three decades, Zviran has served hundreds of local and global employers of all sizes and across a wide range of industries, from both the public and private sectors. Zviran uniquely combines in-depth knowledge of Israel's labor market, including wages, pensions, insurance, labor law, taxation, unions, and capital compensation, with its collection and analysis of salary data, benefits, and employment conditions for hundreds of companies, spanning more than 35 years. Zviran is the Israeli partner of Mercer, the world's largest human resources consulting firm.



Start-Up Nation Central is a non-profit organization that connects Israeli innovation to the world in order to help international entities solve global challenges. Immersed in the Israeli technology ecosystem, we provide a platform that nurtures business growth and generates partnerships with corporations, governments, investors, and NGOs to strengthen Israel's economy and society.

The report was authored by Eynav Ehrlich, Ziv Barel and Assaf Patir, and edited by Uri Gabai and Assaf Kovo. We would like to thank Prof. Eugene Kandel for his insightful contribution. Special thanks to Riki Kaduri and Tal Enselman of the Central Bureau of Statistics for their significant contributions to the report.

Overview and Trends to Follow

After two years of peak growth that started in mid-2020, in mid-2022 the Israeli high-tech industry entered a period of slowdown, and in the first quarter of 2023 we see indications that this trend is even worsening.

The global economic slowdown led to a decrease in the growth rate of high-tech employment, which worsened throughout 2022, reaching a negative growth of -0.2% in the number of employees in the last quarter. The sharp transition from the peak period of 2021 to a global slowdown affected the entire industry and changed it from an "employees' market" to an "employers' market". An indication of this is the number of voluntary resignations- where employees left their job at one company, assuming they would find work quickly and under improved conditions at another company- which dropped dramatically from 11% in the second half of 2021 to 4.7% in the second half of 2022. The rate of layoffs rose from 2.6% in the second half of 2021 to 4.4% in the second half of 2022. It is evident that the first victims of the wave of layoffs were small companies and workers in non-technological occupations.

Nevertheless, and despite the extensive media attention covering the 2022 layoffs, it is important to keep in mind that these layoff rates are not unusual in the Israeli High-Tech sector. In fact, they are nearly similar to the multi-year average of the last decade.

The global slowdown is a significant challenge for the Israeli innovation industry. In addition, at the beginning of 2023, local uncertainty was further exacerbated by the legal legislation introduced by the Israeli government (the impact of this instability on investments in Israeli high-tech is analyzed in the reviews that we published - [Innovation Authority in May](#) and [SNPI in April](#)).

The data we present from a survey conducted by Zviran company in March-April 2023 reflects the heightened distress of the industry and the impact of instability on the high-tech labor market: 25% of companies have completely halted hiring, and a similar percentage reported that they plan to continue layoffs, with a third of them planning to lay off over 5% of their employees. About a third of the companies do not plan to update salaries in 2023. This is an unusual figure for the industry, where the vast majority of companies have increased salaries in recent years.

The encouraging news is that there are initial indications that global high-tech is beginning to recover. The Nasdaq index, for example, rose in the first four months of 2023 by about 20%, and the major technology companies are showing signs of emerging from the crisis. This figure is important, because a key component of Israeli high-tech that helps maintain the stability of manpower over business cycles are the multinational corporations. Indeed, from the data of the report it appears that these companies in Israel have maintained relative stability over the past year with positive growth figures throughout the year ranging from 3% to 1%. This is compared to Israeli-owned companies, which decreased from 4% growth in the first quarter to a -0.7% decline in the fourth quarter of 2022.

However, it is not clear whether the global recovery of multinational corporations will indeed lead to a strengthening of the Israeli high-tech labor market in 2023. First, despite the recovery, large corporations (including [Amazon](#), [Google](#), and [Intel](#)) recently reported on continued efficiency measures and layoffs, especially in their centers in Israel. Another and more significant concern is that the continued political and social instability may cause the recovery to bypass the Israeli economy (for more information, see Innovation Authority's review warning of the disconnection of Israeli high-tech from global technology industry trends).

Even during this period of uncertainty in the Israeli economy and high-tech sector, the infrastructural challenges related to human capital should not be neglected. Foremost among them are the integration of underrepresented populations and the strengthening and expansion of various high-tech training programs. A report published by SNPI this year indicates that there has [been no improvement in the representation of women in high-tech](#), who constitute only about a third of the total workforce. Furthermore, their representation decreases further with higher positions in the organizational hierarchy and R&D roles. In addition, the share of the ultra-orthodox and the Arabs continues to be low, and the concern is that in light of the difficulties experienced by Israeli high-tech- the positive trend of integrating these populations will stop.

Regarding additional training channels, [a study published by SNPI](#) at the beginning of the year showed an increase in the share of graduates from non-academic training channels- a trend that the Innovation Authority has encouraged in recent years- from 2.5% of new high-tech entrants in 2005 to 13% in 2019. In this context, there is a growing concern that the high-tech industry will retreat from the openness of recent years to non-academic training courses, especially against the backdrop of the decrease in demand for employees.

Finally, at the end of 2022 the report of the Perlmutter Committee was published. This comprehensive report was written against the background of the peak period in the industry, but most of the recommendations are infrastructural and relevant even now. At the same time, a committee chaired by Prof. Eugene Kandel and led by CBS, the Innovation Authority and SNPI has been operating in recent months with the aim of improving the high-tech data infrastructure in Israel. At present, we find great importance in implementing the recommendations of these professional committees while restoring stability and certainty to the high-tech industry and Israeli economy.

Key Findings

- **The peak period in Israeli high-tech has ended.** As evidenced by the significant decrease in its annual growth rate – in 2022, the number of high-tech employees increased by 7.4%, a notable drop from the 12% growth rate seen in 2021. However, at first glance, this figure appears to align with the average growth rate of recent years (8%).
- **The high-tech industry entered a slowdown in the second half of 2022.** The growth rate declined consistently throughout the year. In the second half, the number of employees in high-tech increased by approximately 1.3%, which is a low rate compared to recent years. In the last quarter, the number of employees decreased by 0.2%.
- **Slowdown's impact was felt across all sectors.** All sectors showed a decline in growth rate in the second half of the year. On an annual level, the AgriFood-tech and Cleantech sector stood out favourably. Although this sector is not software-biased like most of the leading sectors in Israeli high-tech, it ranked second in the annual growth rate for the second consecutive year.
- **Multinational corporations maintained stability, compared to a decline in local companies.** While the slowdown was felt across the board, there was a noticeable difference between local and multinational corporations. Multinationals showed quarterly growth rates of 1%-3%. In contrast, the quarterly growth rate of local companies dropped from 4% in the first quarter to a negative figure of -0.7% in the fourth quarter. Multinational corporations also had a lower rate of layoffs, with 2% of all employment compared to 4.9% in local companies.
- **Small companies were among the most affected.** About 70% of companies that employed up to 10 employees (most of them startups), maintained stability or reduced the number of their employees. For these companies, which are often in a state of "growth or decline," stability, let alone a reduction, in many cases signifies significant business difficulties.
- **A sharp drop in the demand for employees.** The number of open positions in high-tech at the end of 2022 was estimated at 17 thousand, which is about half of the figure reported in April of that same year (32.9 thousand).
- **An increase in layoffs, a significant drop in the rate of resignations.** Layoffs' rate in second half of 2022 amounted to 4.4% - a 70% increase compared to same period of 2021 (2.6%). However, this rate is similar to the multi-year average. Furthermore, the rate of employees' voluntary resignation in the second half of 2022 was 4.7% - less than half of voluntary resignations' rate during the same period of last year 2021 which was 10.1%. This rate as well is similar to the multi-year average.
- **An increase in the relative share of R&D employees and a reduction in non-R&D employees.** There was a decrease in the number of employees in non-R&D positions in companies with over 50 employees. There were indications that the companies allocated

their resources to maintain the R&D core, even at the expense of employees who are not in R&D positions. One out of three medium-sized companies (51 to 200 employees) and one out of five large companies (over 200 employees) laid off only non-R&D employees.

- **An increase in the proportion of junior¹ employees among R&D personnel.** The economic slowdown in the high-tech industry presented an opportunity for new employees to enter, as many companies opted to continue their development work with less experienced staff, even at the cost of lower productivity. The proportion of junior employees in R&D positions increased in the second half, both in terms of overall employment and R&D employment.
- **From slowdown to crisis? Indications to further exacerbation in 2023.** In April 2023, 30% of the companies reported that they are reducing recruitments, and 25% have completely halted them. Contrary to what is common in high-tech, about a third of the companies do not plan salary updates in 2023. This is an unusual figure for the industry, where the vast majority of companies have made salary updates over the past few years. The rate of companies that do not plan to update salaries this year, is reminiscent of the patterns recorded in 2020 during the COVID-19 crisis.

¹ In the company survey, we define a junior as an employee who has less than two years of experience in high-tech.

Methodology

There are several definitions for the group of companies included in Israel's high-tech industry. Accordingly, in every report dealing with this specific sector, it is necessary to decide what the relevant definitions should be. In this report, the population of high-tech companies is defined as the companies appearing in the Start-Up Nation Finder database² (hereinafter referred to as the Finder database). This differs from Central Bureau of Statistics' definition, which is broader.

Therefore, the number of people employed in the industry, as well as other figures such as the number of open positions, may differ from the official CBS statistics. In recent months, a committee chaired by Prof. Eugene Kandel and led by the CBS, the Innovation Authority, and SNPI has been operating with the aim of examining high-tech definitions and improving the high-tech data infrastructure in Israel.

The report is based on the following sources of information:

- The total number of employees in high-tech, as well as the segmentation by company size, type of ownership (local/foreign), and sector, were determined by cross-referencing employment data from the Central Bureau of Statistics (CBS) with company data from the Finder database.
- As in every year, we conducted a survey of companies within a sample of high-tech companies. The survey was conducted at the beginning of Q1 2023 by Zviran, in collaboration with Israel Innovation Authority and SNPI research institute, and 305 companies responded to it. The survey includes stratification according to sector, company size, and ownership type, in order to obtain a sufficiently diverse sample. Table 1 illustrates the characteristics of the sample population.
- In addition, in this report we present data from a survey carried out by Zviran at the end of Q1 2023.

Table 1: Survey Sample Representation by Sector, Size and Ownership

		Number of employees		Number of companies	
		% Survey	% Finder	% Survey	% Finder
Sector	Internet-SoftwareEnterprise Solutions	40%	47%	40%	50%
	Life Sciences - CleanTech	28%	19%	34%	33%
	Manufacturing - Industrial	26%	28%	19%	13%
	Telecommunications	5%	6%	6%	4%
Size	1-10	0%	3%	19%	46%
	11-50	2%	14%	21%	34%
	51-200	8%	24%	24%	15%
	201-500	18%	18%	19%	3%
	501+	73%	42%	17%	2%
Ownership	Local	76%	76%	83%	93%
	Multinational Corporations	24%	24%	17%	7%
Total		103,627	301,867	305	6,988

²See the SNC Finder database definitions here :<https://finder.startupnationcentral.org/about/glossary>

Chapter 1: 2022 - From Peak to Slowdown

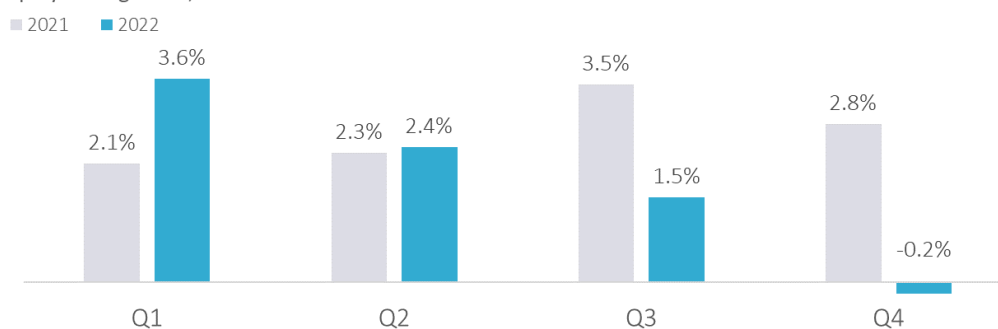
Israeli high-tech figures, particularly investments and exits, returned in 2022 to their long-term trends after setting record numbers in 2021 (for more information, see [SNPI and Start-Up Nation Central's annual report](#)). However, an examination of the developments throughout 2022 show a change that took place starting mid-year, with the transition of the global economy – and Israeli high-tech, following suit – from peak to slowdown.

Naturally, these developments did not go unnoticed in the high-tech job market. Just as the volume of investments decreased by almost half compared to 2021, so did the employment growth in 2022, dropping to 7.4% from 12% in the previous year. Like other figures, this figure also represents a return to the average annual growth rate in the last decade, which was about 8%.

However, an analysis of the data on a quarterly basis shows that there was a continuous decline in the employment growth rate throughout the year. In the first half of 2022, the growth rate was still high (about 6%) and can be seen as a continuation of the peak period of the previous year. However, by the third quarter, the growth rate already dropped to 1.5%, a rate lower than the annual long-term average (8%), and even dropped to a negative level of -0.2% in the fourth quarter. It should be noted that in a typical year, the employment growth tends to be higher in the second half (after the end of the academic school year), so the gap between the two halves of 2022 is particularly significant.

Figure 1: One year, two "periods": 2022 was the transition from peak growth to slowdown

Employment growth, QoQ



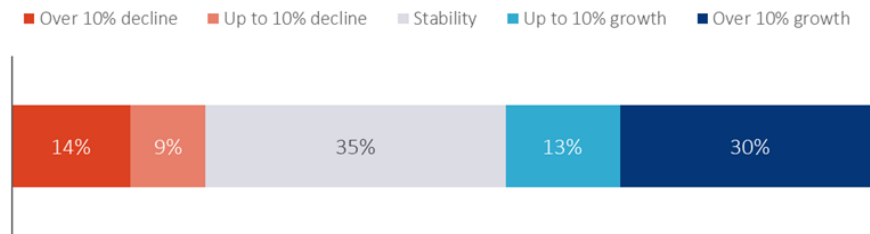
Source: CBS data for companies on Finder database

The second half of 2022: the start of a cross-industry slowdown

The low growth rate in the number of employees in the second half of the year- an increase of only 1.3%, a significant decrease compared to previous years- was evident across the high-tech industry. That is, this decrease was recorded in companies of all sizes and in all sectors. Less than half of the companies reported positive growth, and one in five companies even reported a decrease in the number of employees during this period. At the same time, 30% of the companies reported an increase of over 10% in the number of employees. However, the

absolute majority of these companies were small companies (up to 50 employees), so even though the percentage increase is high, it represents a relatively small number of employees.

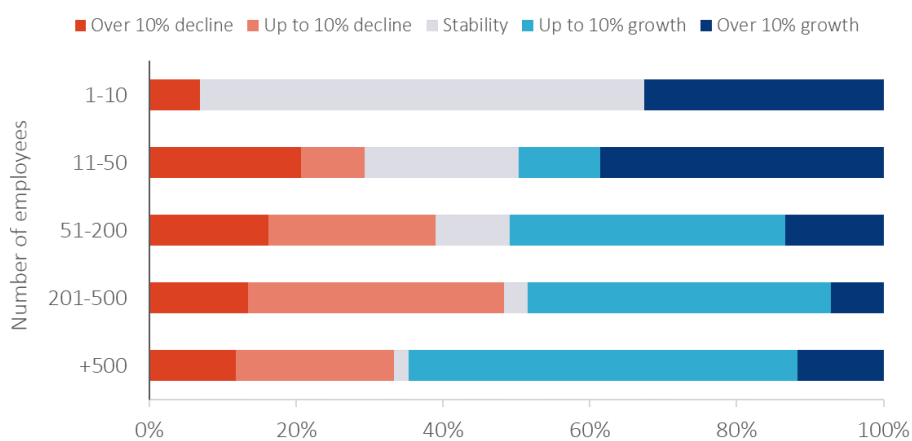
Figure 2: More than 50% of high-tech companies did not grow in the second half
Employment growth rate in H2-2022



Source: High-tech human capital survey

In the breakdown by company size, it is evident that small companies employing up to 10 employees (most of them startups) were significantly affected during this period, with approximately 70% of them maintaining stability³ or reducing the number of their employees. Unlike large companies, where stability in the number of employees does not necessarily indicate business difficulties, startups are often in a state of "growth or decline." Accordingly, stability in the number of employees, let alone a reduction, in many cases signifies significant business difficulties for these companies.

Figure 3: Most startups did not grow in the second half of 2022
Employment growth rate in H2-2022



Source: High-tech human capital survey

Slowdown's impact was felt across all high-tech's sectors

Almost all high-tech sectors experienced positive growth in 2022 (except Mobile and Telecom Technologies), but at lower rates compared to 2021. Alongside the growth in software-based sectors, the AgriFood-tech and Cleantech sector stood out favorably, ranking second in annual

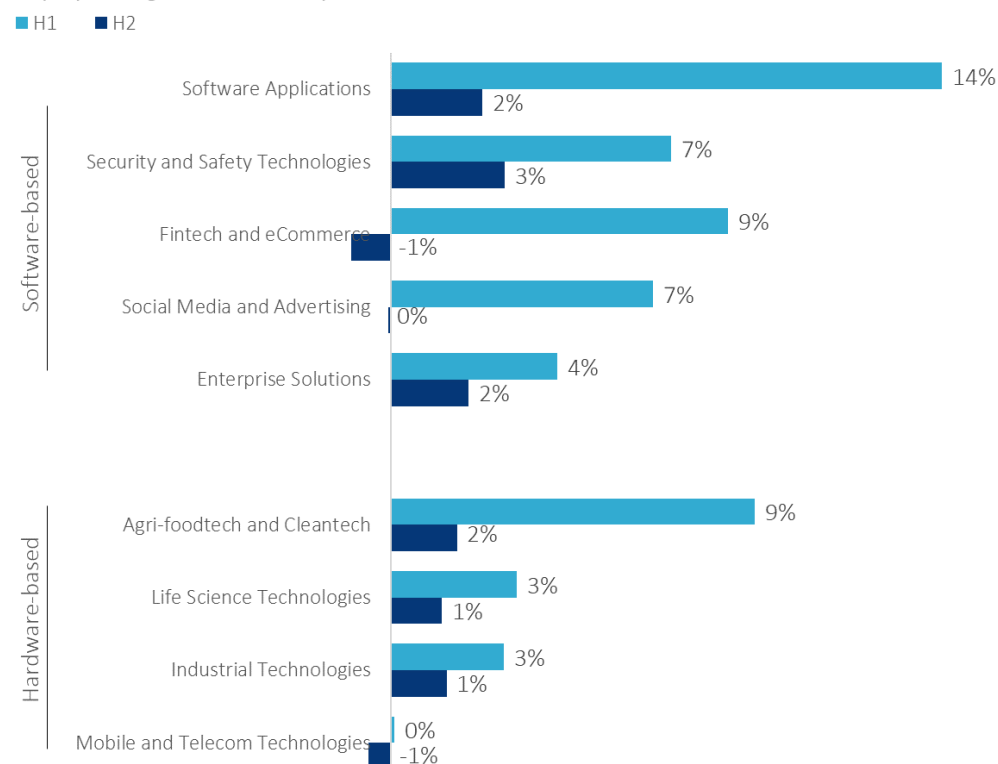
³ The number of employees remained unchanged.

growth rate for the second consecutive year. It is also the only sector that experienced an increase in the number of investment rounds between 2021 and 2022. Among its leading sub-sectors was the field of Alternative Proteins. In a report published by [SNPI institute](#), the potential for the development of this field in terms of human capital was presented, due to its being characterized by occupational diversity in several aspects: the training of the employees (more academic and more with life science training), gender (higher female representation, including in management positions) and geography (more companies establishing their activities outside of Tel Aviv).

Examining the growth trends at the half-yearly level shows that the slowdown that characterized the second half was seen across the board. That is, there was a decrease in growth rates in all sectors. The intensity of the decrease between the two halves varied by sector, but we believe that the differences are due to the different life-cycle compositions of the companies in the various sectors. For example, the Software Applications, Fintech and eCommerce sectors, characterized by a high proportion of young and small companies, decreased more sharply compared to sectors characterized by more established and larger companies, such as Industrial Technologies.

Figure 4: Software-based sectors continued to lead, AgriFood-tech and Cleantech stood out in the hardware-based landscape

Employment growth in 2022 by half



Source: CBS data for companies on Finder database

Decline in recruitments: fewer firms recruited; scale of recruitment reduced

The slowdown was reflected in recruitment patterns- fewer companies recruited and the scale of recruitment was reduced compared to previous years. The total number of recruitments in the second half of the year is estimated at about 30 thousand employees, a decrease of more than 10% compared to the same period last year (about 34 thousand).

About half of the companies reported in the survey that they recruited less than planned in light of the economic situation at the time. About 70% of the companies recruited employees in the second half of 2022- a low figure compared to an average rate of 85% recorded in recent years. The small companies were hit the hardest in this aspect as well: only half of the companies with up to 10 employees, and about 80% of the companies with 11-50 employees, recruited employees during this period. In a regression analysis that isolated the effect of various factors (size, sector, and type of ownership), we found that the only variable that significantly (and negatively) affected the chance that a company had recruited employees was the fact that the company was very small.⁴

Back to “employers’ market”’: an increase in layoffs alongside a significant drop in the rate of resignations

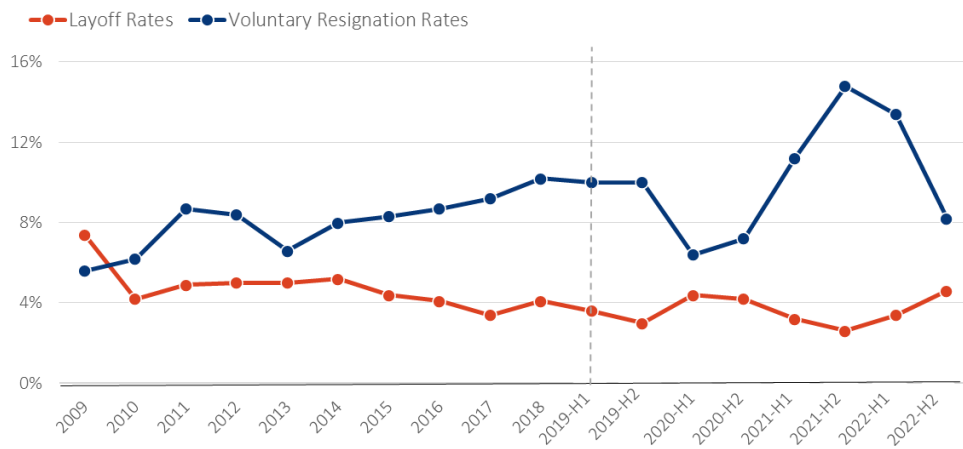
Throughout 2022, particularly in the second half, the media often reported on high-tech companies laying off workers in order to reduce expenses. In fact, the rate of layoffs in the second half of 2022 reached 4.4%—a significant increase of approximately 70% compared to the 2.6% recorded in the corresponding period of 2021. Meanwhile, the rate of employees voluntarily leaving their workplaces decreased from 10.1% in the second half of 2021 to 4.7% in the second half of 2022. In this sense, it can be said that the labor market underwent a sharp transition in 2022, shifting from an "employees' market" to an "employers' market."

At the same time, it is important to note that the measured rates of layoffs and voluntary departures do not indicate an abnormal slowdown in the sector. In fact, these rates are very close to the multi-year average. The layoff rate is only 0.3 standard deviations higher than the average of the last decade, and the rate of resignations is 0.3 standard deviations lower than the average. Therefore, as of 2022, we can observe a return to the levels that were prevalent in the high-tech industry between the great recession of 2008-9 and the outbreak of the COVID-19 pandemic.⁵

⁴ The full results of the statistical analysis are presented in the appendix.

⁵ SNPI's collaboration in high-tech human capital survey started in 2021. For a multi-year comparison, we rely on multi-year data from Zviran. However, it's important to note that the sample population in Zviran is different from the company survey conducted by SNPI and IIA. Therefore, a direct comparison of the numbers is not feasible.

Figure 5: A significant drop in voluntary resignations, returning back to average levels
High-tech turnover - voluntary resignation vs. layoffs, annual rates



Source: Zviran after adaption

December 2022: decrease in open positions

Another decline was also observed in the number of open positions, which reflects the demand for employees in the high-tech industry. The survey reveals that by the end of 2022, there were approximately 17 thousand open positions in high-tech, roughly half the number of openings reported in April of the same year (32.9 thousand). This figure not only represents a "correction" from the unusually high number recorded in April during the industry's peak, but it is also lower than previous trends and comparable to the figures observed during the COVID-19 crisis (December 2020).

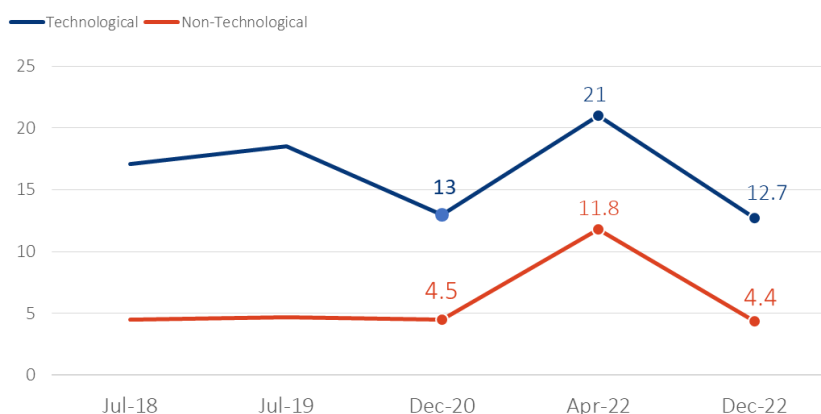
Table 2: Estimated Number of Open Positions

Dec-22	Apr-22	Dec-20	Jul-19	Jul-18
17.1	32.9	17.5	23.2	21.6

Between April and December 2022, there was a decline in the number of open positions in both technological and non-technological fields. However, these declines represented two different trends. Among non-technological open positions, there was indeed a sharper decrease (over 60%), but it marked a return to past figures (approximately 4,000 open positions) after an unusual spike - more than double the number of previous years - recorded in April. Technological open positions, on the other hand, decreased more moderately (by 40%), but reached the lowest scope seen in recent years (12.7 thousand).

Figure 6: Decrease in open positions - non-technological returned to annual average, technological fell below the average

Estimated number of open positions, in thousands



Source: High-tech human capital surveys

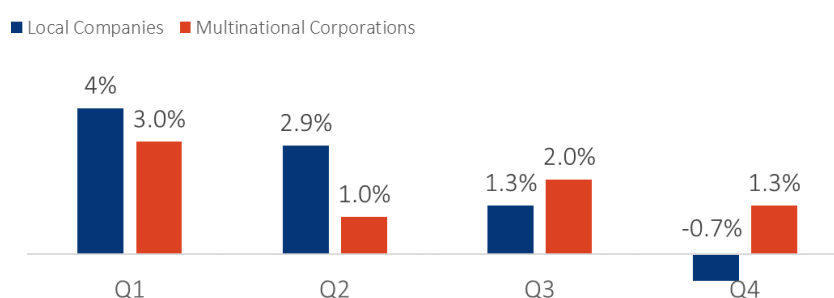
Employers had less difficulty recruiting technology employees. In April 2022, almost all companies (85%) reported difficulty in recruiting for R&D positions. In December 2022, this rate dropped to 55%, with half of the companies reporting that the difficulty was low compared to the previous year. In non-technological professions, the difficulty in recruiting was reported at much lower rates. Only 20% of the companies encountered difficulty in recruiting non-technological employees.

Chapter 2: Multinational Corporations Maintained Stability, Local Companies Stagnated

In 2022, both local companies and multinational corporations grew at a rate of 7.4%. However, an analysis of the quarterly level reveals that the same annual figure reflects two different trends. Local high-tech companies started the year with high growth, following the trend of 2021. However, as the year progressed, the growth in the number of their employees moderated, eventually leading to negative growth in the fourth quarter. Multinational corporations, on the other hand, maintained moderate positive growth throughout the year.

Figure 7: Multinational corporations maintained positive growth while local companies stagnated

Employment growth in 2022, QoQ

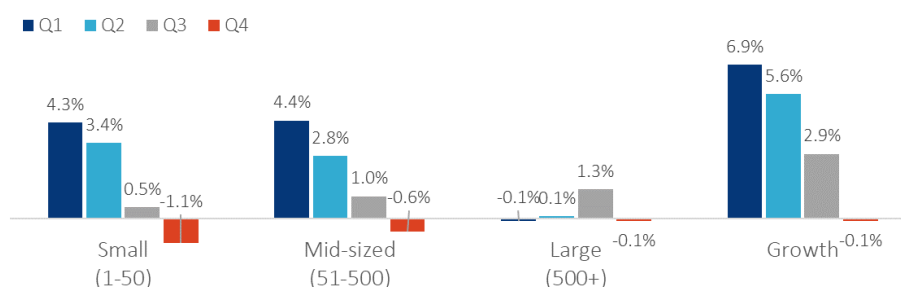


Source: CBS data for companies on Finder database

The stagnation that characterized the local high-tech industry in the second half of the year was across the board, affecting even "Growth" companies.⁶ These companies, along with small startups (up to 50 employees), experienced the most significant decrease in annual growth rates between 2021 and 2022 (from 31% to 16% and from 22% to 7%, respectively).

Figure 8: The downward trend was widespread among local high-tech companies

Employment growth in 2022, QoQ



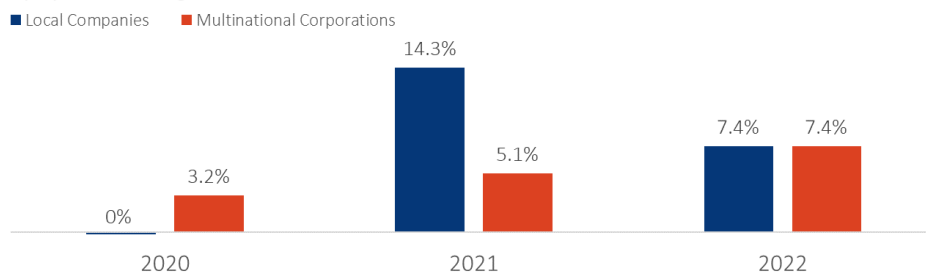
Source: CBS data for companies on Finder database

While local companies experienced a decrease in annual growth rate between 2021 and 2022, multinational corporations saw an increase compared to the previous year (5%). Looking at the growth rates over the past three years, including the COVID-19 crisis in 2020, a record year in

⁶ "Growth" companies are defined as those that meet at least one of the following criteria: (1) private ownership and a valuation of \$1 billion or more ("unicorns"), (2) IPO in the past decade, or (3) membership in the Growth Companies Forum.

technology investments in 2021, and the initial entry into a slowdown in 2022, it becomes evident that local high-tech companies are highly sensitive to volatility in global markets, in contrast to the relative stability of R&D centers of multinational corporations. This data is important for the ongoing discussion in the high-tech industry regarding the competition for skilled human capital between local and multinational corporations. While multinational companies are often viewed as competitive threats to quality human capital during times of local prosperity, they also tend to maintain stability during times of crisis, playing an important role in the consistent development of local human capital.

Figure 9: The local high-tech sector is more volatile compared to multinational corporations
Employment annual growth rate



Source: CBS data for companies on Finder database

The stability of multinational corporations in the second half of 2022 is reflected in their recruitment patterns. A higher proportion of multinational corporations recruited employees and tended to follow their hiring plans despite the "economic situation" compared to local companies. In cases where fewer employees were recruited than planned, multinational corporations were more likely to implement a policy of hiring freezes rather than carrying out partial recruitments. One possible explanation for this phenomenon is the existence of a regulated policy by the parent company abroad.

Figure 10: More multinational corporations recruited employees, and did so as planned
Distribution of recruitment patterns among companies in H2 2022



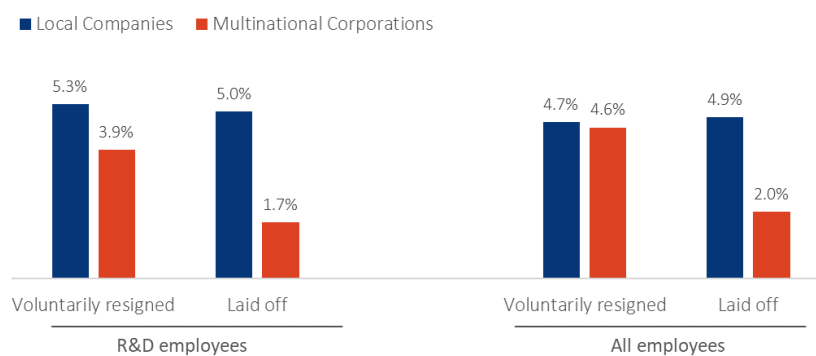
Source: High-tech human capital survey

Although more multinational corporations recruited employees, the share of recruitments compared to the overall employment at the beginning of the second half was lower compared to local companies (7% vs. 11%, respectively). The main reason for this is the apparent lower employee turnover in multinational corporations, which can be attributed to a higher rate of layoffs in local companies.

Although the local companies laid off a greater share of their employees, fewer companies chose to lay off employees in the first place compared to the multinationals (36% versus 50%). The combination seems contradictory at first glance: more multinational corporations implemented layoffs, but the share of their layoffs was smaller. The survey data indicates that the explanation stems from the reasons behind the layoffs. Only a tenth of multinational corporations reported laying off employees at higher rates than planned due to the state of the economy, compared to a quarter of local companies. Therefore, the survey data suggests that the layoffs in multinational corporations were likely more part of their "routine work," while in local companies, they were more reactive to the state of the economy.

Figure 11: Higher employee turnover and layoff rates in local companies

High-tech turnover - voluntary resignation rates vs. layoff rates in H2 2022

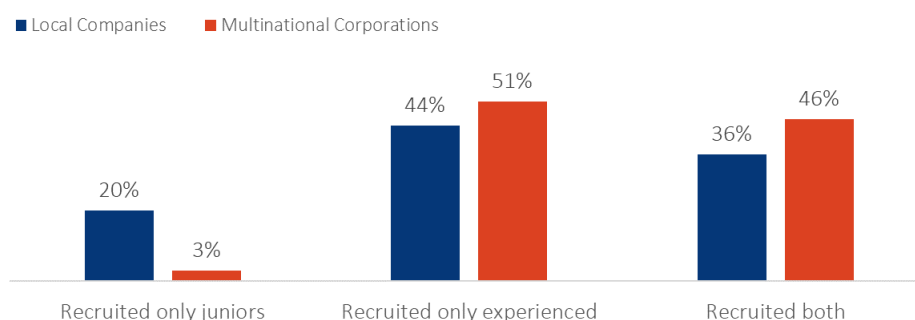


Source: High-tech human capital survey

Another interesting trend emerging from the survey is the widening employee turnover gap among R&D employees. Fewer R&D employees chose to resign from their positions in multinational corporations, and from the companies' perspective, fewer R&D employees were terminated compared to local companies. Low turnover in R&D, which is the core of high-tech companies' activities, is of significant importance for their ability to maintain stability in the present and grow in the future. Examining the recruitments by level of experience reveals that one-fifth of local companies only recruited junior for R&D positions, a figure that may indicate resource constraints.

Figure 12: More multinational companies tend to recruit experienced R&D employees

Distribution of companies by recruitment patterns of R&D employees in H2 2022



Source: High-tech human capital survey

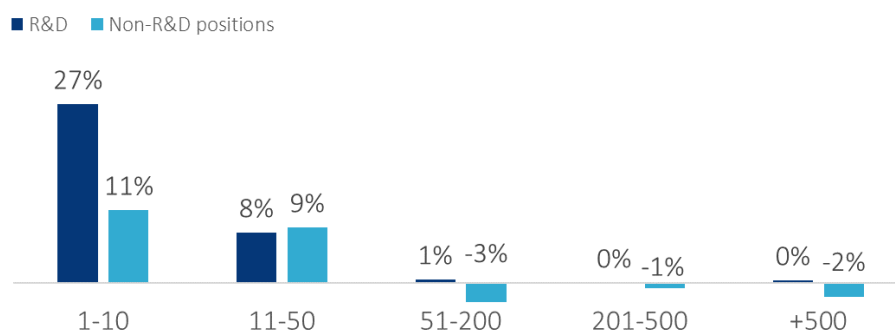
Chapter 3: High-Tech Has Returned to Its Core - Retaining R&D Employees

The boom experienced by local companies in 2021, particularly among "Growth" companies, led to a surge in demand for employees in non-technological positions such as human resources, marketing, finance, and more. This is evident in the significant increase in the number of open positions for non-technological professions in December 2021, more than double compared to previous years. However, a year later, as the effects of the slowdown took hold, the high-tech sector went back to focus on its core: the retention of R&D employees.

In the midst of stagnation, it appears that companies invested their resources during the second half of 2022 in increasing the number of R&D employees. While the number of R&D employees grew by an average of 2.4%, the number of employees in non-R&D positions remained unchanged. This phenomenon, characterized by a low growth rate of non-R&D employees compared to the growth rate of R&D employees, is consistent across the industry. The trend was observed in all company sizes except for companies with 11 to 50 employees. In companies with over 50 employees, the number of non-R&D employees even decreased on average. This figure is particularly significant for large companies as they are the main employers for these positions.

Figure 13: The number of employees in non-R&D positions decreased among their main employers - the large companies

Average growth of the number of employees in H2-2022



Source: High-tech human capital survey

Another disparity in growth trends among the two types of positions was recorded in multinational companies, where the number of R&D employees grew by an average of 1.3%, while the number of employees in non-R&D positions decreased by an average of 3.7%. Although R&D centers, which typically have a higher proportion of R&D workers due to the nature of their work, maintained stability in the second half, this did not translate into opportunities for non-technical employees.

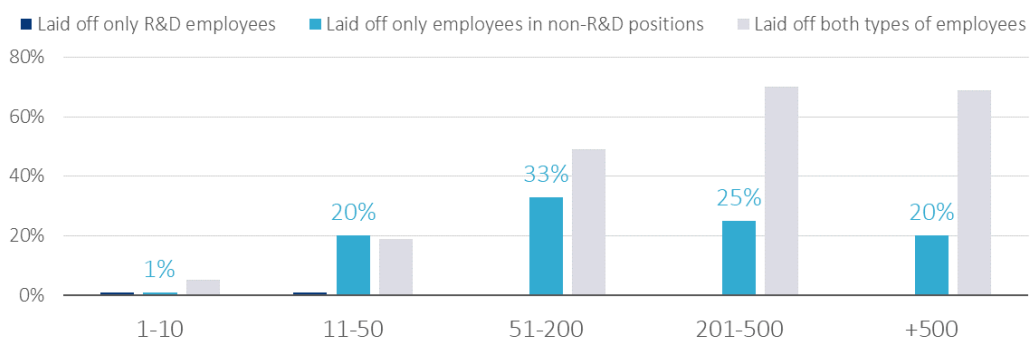
The transition to an "employers' market" did not circumvent R&D roles: the rate of voluntary departures dropped from 8.4% in the second half of 2021 to approximately 5% in the second

half of 2022. Even more noteworthy is the change in the layoff rate, which increased from 1% to 4.4%. This significant increase is primarily attributed to a number of small and medium-sized software-based companies that ceased operations during the year and reported exceptionally high layoff rates.

An examination at the company level reveals the effort to safeguard R&D activities, even at the cost of non-R&D positions. For instance, **nearly a quarter of the companies reported laying off employees exclusively from non-R&D positions, while less than one percent reported terminating only R&D employees.** This phenomenon is particularly evident in medium-large companies: none of the companies fired R&D employees only, but one in three medium-sized companies (51-200 employees) and over one in five large companies (200+) dismissed employees solely from non-R&D positions.

Figure 14: A significant portion of large companies maintained their R&D core and laid off only employees in non-R&D positions

Share of companies that laid off employees in the second half of 2022 by job type



Source: High-tech human capital survey

The trends observed in recruitment are the complete opposite, with **approximately a quarter of companies exclusively hiring employees for R&D positions.** Smaller companies, that are more focused on technological activities, were more prone to recruit exclusively for R&D roles. Therefore, it comes as no surprise that half of the small companies did not engage in any employee recruitment, and when they did, the majority of their hires were for R&D positions. However, in medium and large companies where business operations are more stable and rely on human capital in non-R&D positions, one would expect recruitment efforts for these roles as well. The survey reveals that around a quarter of medium-sized companies (50-200 employees) and one-tenth of large companies (200-500 employees) exclusively recruited for R&D, indicating that these companies prioritized allocating resources to maintain their R&D core, despite their dependency on additional positions.

Chapter 4: R&D Employees - Juniors Were Less Affected

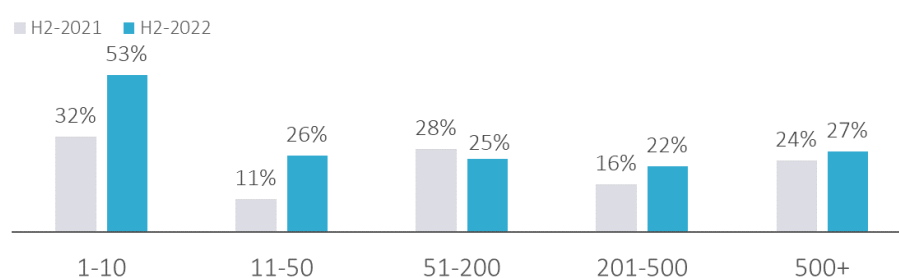
Much has been said in recent years about the difficulty faced by juniors⁷, employees with little to no experience in the field, when it comes to integrating into high-tech R&D roles. The common assertion is that new employees require an extended training period before they reach a level of productivity that makes their employment worthwhile, and that many high-tech companies (excluding larger ones) lack the administrative resources to invest in their training. In light of this, an intriguing finding from the survey is that this specific group was scarcely affected by the slowdown experienced by the high-tech industry in the second half of 2022.

The survey reveals that during the second half of 2022, there was an increase in the proportion of juniors in R&D positions both in terms of overall employment and among R&D employees. That is, **it seems that many companies have opted to continue their development work with less experienced employees, even at the cost of lower productivity.**

According to the survey, a higher percentage of companies reported an increase in the hiring rate of juniors compared to those that reported a decrease in light of the state of the economy (13% vs. 10%). Overall, juniors accounted for 26% of R&D recruitments in the second half of 2022, up from 22% in 2021. In fact, we observed a higher rate of junior recruits in almost every company size category compared to last year. The share of junior recruited was particularly high among startups with up to 10 employees, who were significantly affected by the slowdown and faced a more pressing need to reduce salary costs.

Figure 15: Widespread increase in the share of juniors out of R&D recruitments, particularly among startups

Rate of junior level recruits in H2 of 2021 and 2022



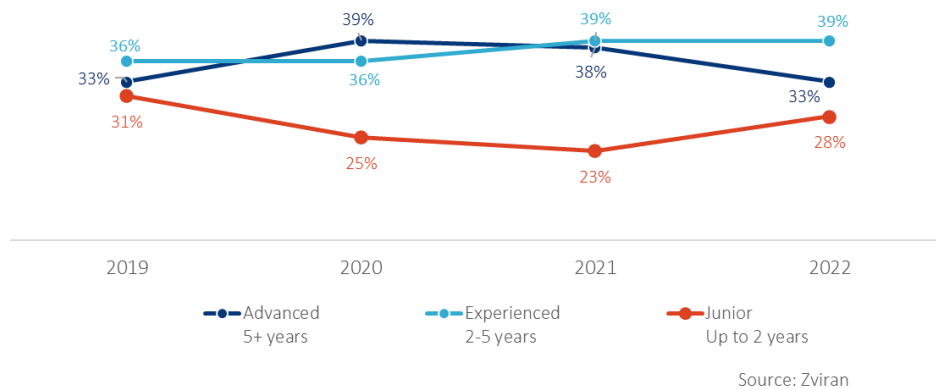
Source: High-tech human capital survey

Zviran's data also demonstrates an increase in the proportion of juniors among technological recruits, coupled with a decline in the share of more experienced employees (those with over five years of experience), who typically command higher salary levels.

⁷ Juniors are defined as employees with up to two years of experience in the high-tech industry.

Figure 16: Juniors' share of recruitments increased while the most experienced's share decreased

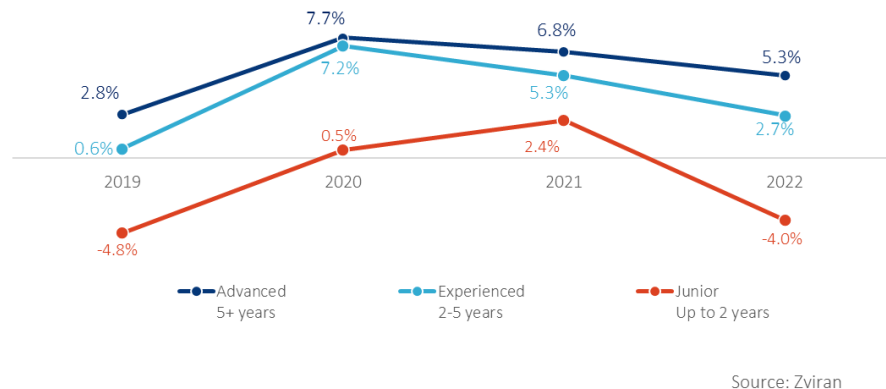
Distribution of technological recruits by level of experience



Furthermore, Zviran's data shows that the wage premium associated with hiring new employees was negative for junior positions. In other words, on average, the cost of incorporating a new junior employee was lower than that of retaining existing employees at the same experience level. This is in contrast to the premium observed for employees with over two years of experience, which remains positive.

Figure 17: Juniors shifted to negative salary premium

Salary gaps between new employees and existing employees in technological positions



In conclusion, we observe that the overall slowdown in the high-tech industry actually presents an opportunity for new employees to join more easily than in previous years (albeit at a lower salary).

Appendix

Table 3: Regression analysis on whether a company recruited employees in H2, 2022

		(Logit)
	Intercept	3.368*** (0.856)
Sector	Life Science - CleanTech	0.365 (0.320)
	Industrial - Manufacturing	0.086 (0.461)
	Telecommunications	1.289 (1.328)
Size	<11	-1.337*** (0.378)
	<51	-2.041** (0.875)
	>200	13.865 (960.962)
	>500	0.060 (1,414.214)
Ownership	MNC	-0.716 (0.708)
	Observations	297
	R^2	0.204

Table 4: Regression Analysis on Resignation Rates of Overall and R&D Employees

	Robust	All employees		R&D employees	
		Yes	No	Yes	No
	Intercept	0.0382 (0.0080)	0.03 * (0.016)	0.0279 (0.0088)	0.027 (0.021)
Sector	Life Science - CleanTech	0.0008 (0.0037)	0.001 (0.007)	0.0022 (0.0054)	0.000 (0.012)
	Industrial - Manufacturing	-0.0088 (0.0044)	-0.004 (0.009)	-0.0103 (0.0049)	0.000 (0.012)
	Telecommunications	0.0078 (0.0054)	0.008 (0.010)	-0.0014 (0.0056)	0.011 (0.013)
Size	<11	-0.0067 (0.0080)	0.02 * (0.016)	-0.0096 (0.0083)	0.027 (0.020)
	<51	-0.0218 (0.0050)	-0.018 * (0.01)	-0.0082 (0.0059)	-0.007 (0.014)
	>200	0.0053 (0.0042)	0.012 (0.008)	0.0165 (0.0048)	0.014 (0.011)
	>500	-0.0062 (0.0043)	-0.013 (0.008)	-0.0093 (0.0049)	-0.013 (0.012)
Ownership	MNC	-0.0078 (0.0039)	-0.006 (0.008)	-0.0034 (0.0047)	-0.012 (0.011)
	Observations	253	301	253	301
	R^2		0.04644		0.03121

Table 5: Regression Analysis on Layoff Rates of Overall and R&D Employees

	Robust	All employees		R&D employees	
		Yes	No	Yes	No
	Intercept	0.0330 (0.0070)	0.079 *** (0.021)	0.0258 (0.0052)	0.087 *** (0.025)
Sector	Life Science - CleanTech	-0.0098 (0.0032)	-0.025 * (0.009)	-0.0034 (0.0032)	-0.014 (0.015)
	Industrial - Manufacturing	-0.0038 (0.0039)	-0.018 (0.011)	-0.0007 (0.0029)	-0.010 (0.013)
	Telecommunications	0.0019 (0.0047)	-0.005 (0.014)	0.0044 (0.0033)	0.010 (0.015)
Size	<11	-0.0207 (0.0071)	-0.071 ** (0.021)	-0.0083 (0.0049)	-0.063 ** (0.023)
	<51	-0.0076 (0.0044)	0.007 (0.013)	-0.0145 (0.0035)	-0.006 (0.016)
	>200	0.0048 (0.0036)	0.011 (0.011)	0.0009 (0.0028)	0.010 (0.013)
	>500	-0.0095 (0.0037)	-0.018 (0.011)	-0.0062 (0.0029)	-0.019 (0.014)
Ownership	MNC	-0.0123 (0.0034)	-0.017 (0.016)	-0.0132 (0.0028)	-0.023 (0.013)
	Observations	296	299	251	301
	R^2		0.06758		0.03121