Deep Tech Study

December 2022

Tesi

Foreword

Deep tech refers to technologies that are based on scientific and engineering breakthroughs, such as artificial intelligence, biotechnology, and quantum computing. These technologies have the potential to drive significant economic and societal impact, and as such, they are an important area of focus for many countries, including Finland.

Finland has a strong tradition of research and development, and has been at the forefront of many deep tech developments. The country has a number of world-class universities and research institutes that are working on cutting-edge technologies in areas such as AI and quantum computing. Additionally, there is a growing ecosystem of deep tech startups in Finland that are developing innovative technologies and products.

The overall development of Finnish deep tech has been positive in recent years. There has been an increase in the amount of invested capital and the number of funding rounds for deep tech companies in Finland. This shows that there is growing interest and support for the deep tech sector in the country.

However, it is important to note that the development of deep tech in Finland cannot be achieved by any one stakeholder alone. The government, investors, corporations, and universities all have a role to play in strengthening and growing the deep tech ecosystem in the country. For example, the government can provide support through funding and regulatory frameworks, while investors can provide the capital that is needed to develop and scale deep tech companies. Universities and research institutes, on the other hand, can provide the expertise and knowledge that is necessary for deep tech companies to succeed.

It is also important to note that investing in deep tech requires specialized skills and expertise. Deep tech companies often take longer to scale than traditional startups, and as such, they may not fit into the traditional venture capital or growth investor mindset. As a result, investors in the deep tech sector need to have a deep understanding of the technologies and markets in which they are investing.

Looking to the future, the development of deep tech in Finland is likely to continue to be a key focus for the country. The government, investors, and other stakeholders will need to work together to support the growth of the deep tech ecosystem in Finland. This will involve providing the necessary funding and expertise, as well as creating a supportive regulatory environment that allows deep tech companies to thrive. Ultimately, this will help to drive economic growth and innovation in Finland, and position the country as a global leader in deep tech.

- Chat GPT, the Open AI algorithm *when it was asked to create foreword based on our findings and observations of Finnish deep tech*

We agree.

Henri Hakamo
Chief Digital Officer

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Director, Venture Capital

Tuomas Rekonen
Investment Associate

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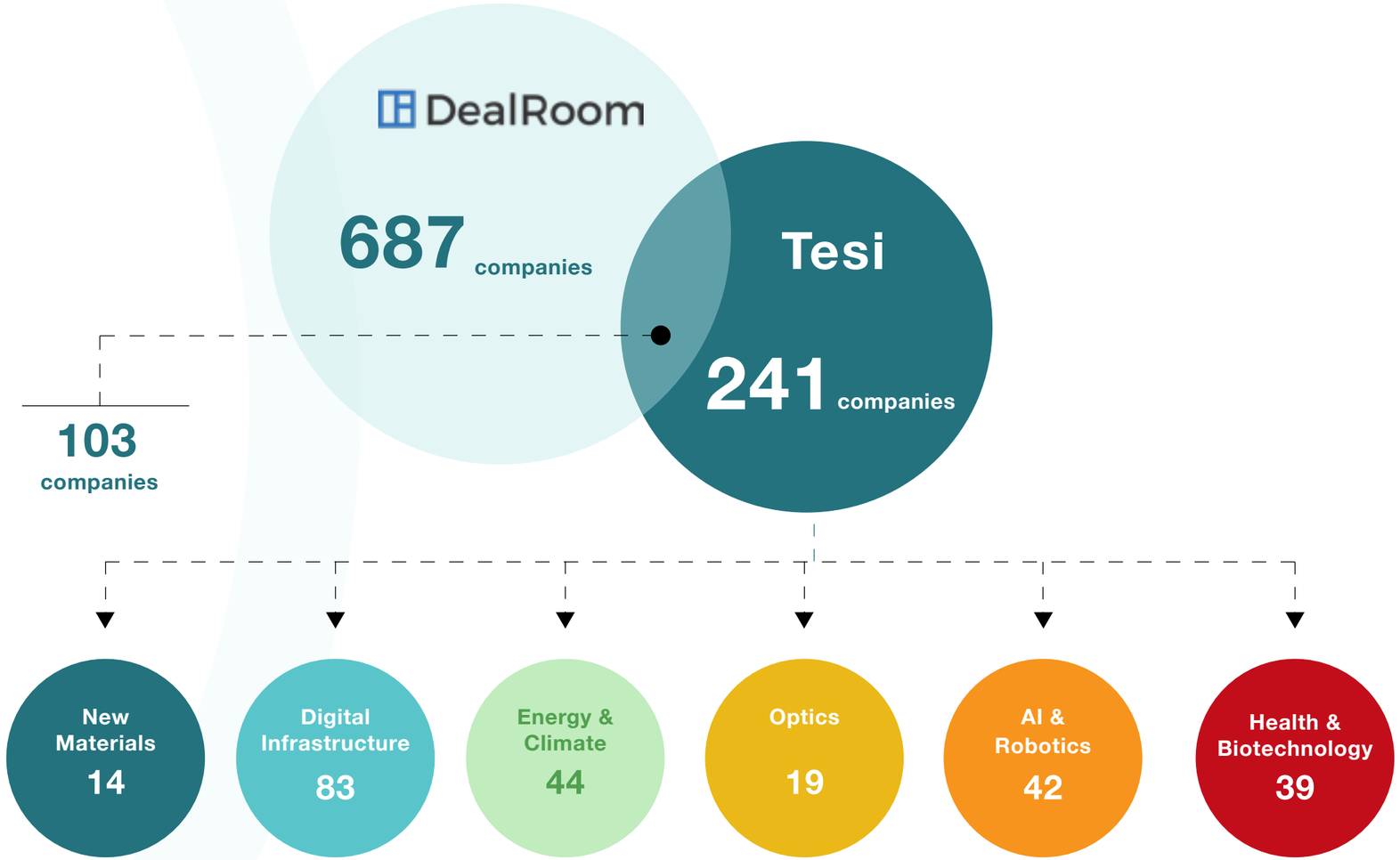
Analyst

Tesi's definition of deep tech

Tesi's selection is hand-picked from the Finnish ecosystem mainly from already (VC-) funded companies. Companies have been manually screened and categorised as deep tech by members of our investment team.

Required characteristics of deep tech companies:

1. **Science- and research-based**
2. **High technological barrier**
3. **Company operates at technological frontier**



Examples of deep tech companies

New Materials	Digital Infrastructure	Energy & Climate	Optics	AI & Robotics	Health & Biotechnology
INFINITED FIBER	IQM	soletair power	ELFYS	ZENROBOTICS	nanoform small is powerful®
SPINNOVA®	ICEYE	BETOLAR	EMBERION	INSCRIPTA®	finnadvance
PAPTIC®	picosun	GEYSER BATTERIES	Detection Technology	MVISION - Artificial Intelligence in Medical Imaging -	SYNOSTE

Key observations

Finnish deep tech is growing fast

- VC/growth investments into deep tech have grown significantly, and likely will continue to grow
- Deep tech ecosystem is growing fast
- More and more active investors

Variable development in deep tech ecosystem

- Underwhelming development in recent years in founding new deep tech companies
- Ecosystem development takes time
- Outcomes are heavily concentrated

The dilemma of large investment rounds

- Finnish funds do not posess capacity to fund large investment rounds
- All investor types are needed

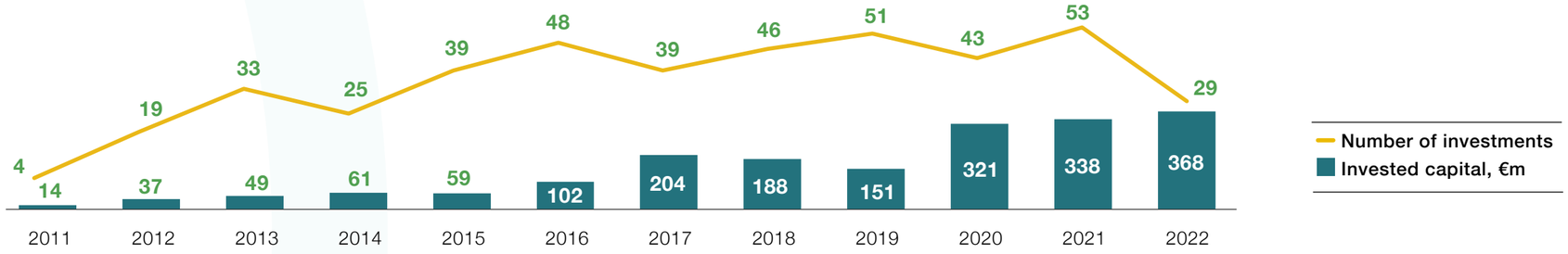
Note: researched time periods between different analyses might differ based on the availability of data

Finnish deep tech is growing fast

VC/growth investments into deep tech have grown significantly and will likely continue to grow

€1,9 billion have been invested in Finnish deep tech since 2011

Development of VC/growth investments in deep tech

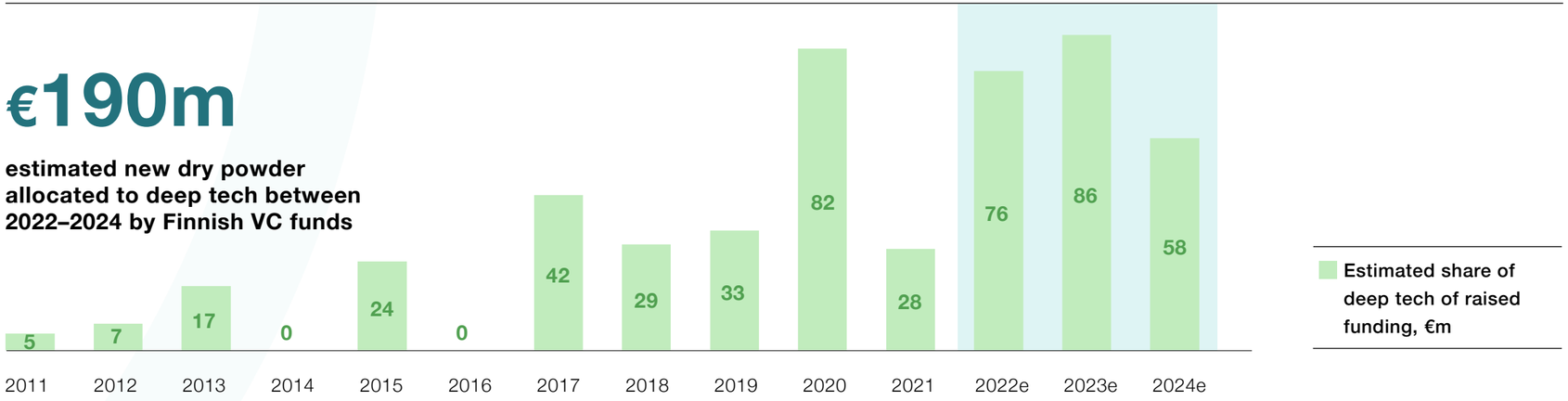


Fundraisings suggest future growth in deep tech funding

Development of raised funding for deep tech investments by Finnish VC funds

€190m

estimated new dry powder allocated to deep tech between 2022–2024 by Finnish VC funds



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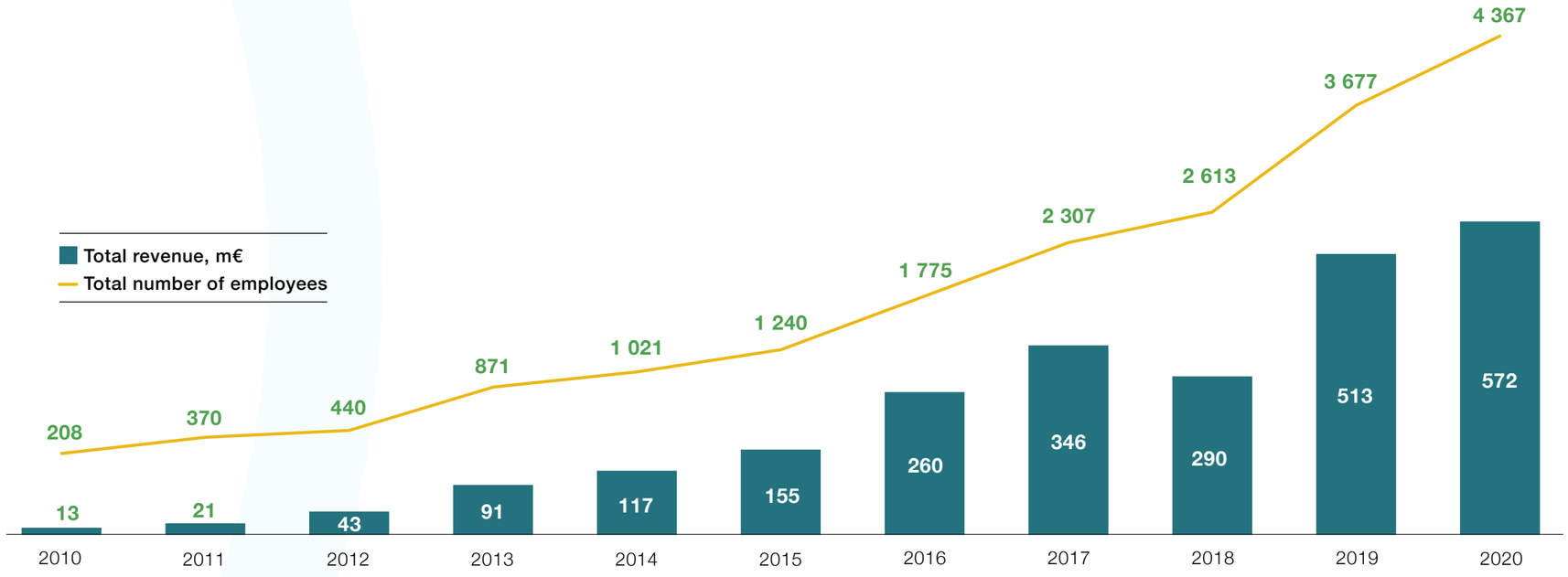
Deep tech ecosystem is growing fast

Total revenue grew 47% a year through 2010–2020 meanwhile the number of employees grew 36% a year (compound annual growth rate)

Development of total revenue and total number of employees in deep tech



More and more active investors

Since 2011, the number of investors have grown approximately 15% a year (CAGR)[1]

Since 2018, most of the investors investing in Fnnish deep tech have been foreign

Deep tech investor pool is diverse

Deep tech investor pool

of all investors are foreign

of all investors are private funds

Private funds	Venture capital, growth, and buyout funds	**117 investors**
Goverment	Goverment institutions	**6 investors**
CVC	Corporate venture capital, corporations	**24 investors**
Other	Family offices, angel investors, accelerators etc	**54 investors**

[1] Investor data includes only transactions available on Pitchbook (since 2011). The data consists of 265 transactions (of 429) or 62% of total sample

Variable development in the deep tech ecosystem

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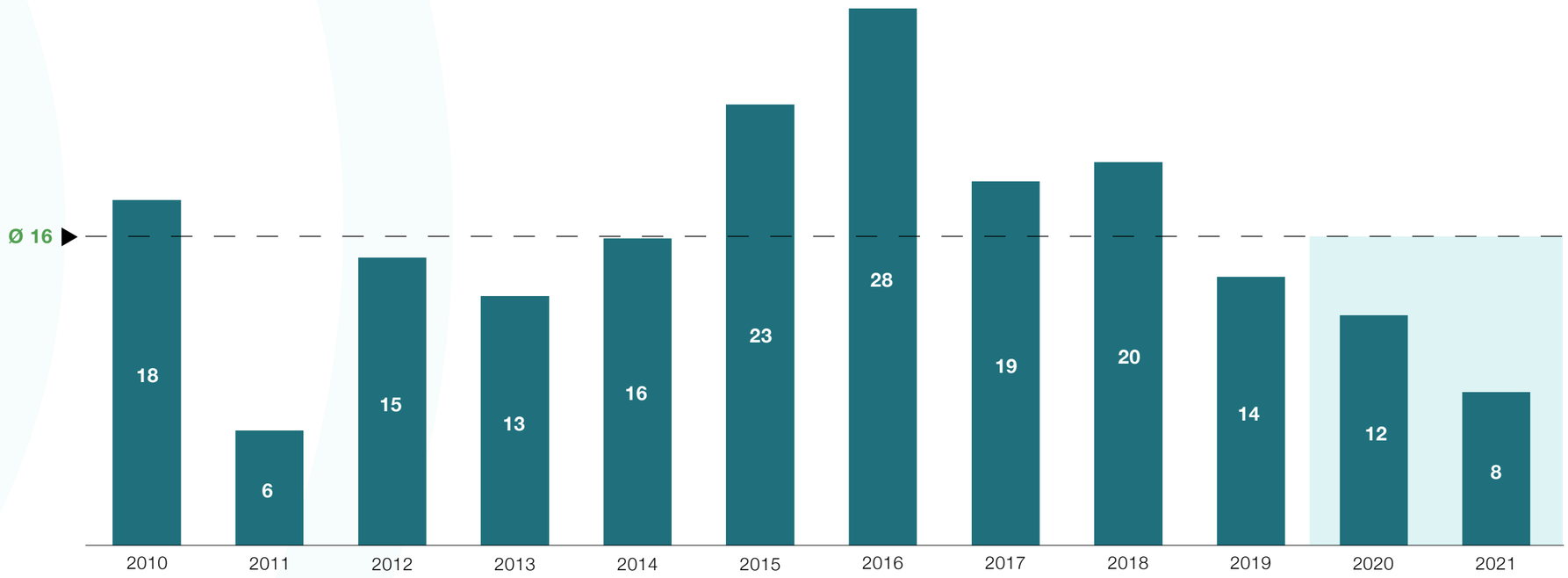
Underwhelming development in recent years in founding new deep tech companies

On average, approximately 16 new deep tech companies are founded yearly

Current data shows a decreasing trend since 2018

Number of founded companies per year[1]



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[1] Companies founded in 2020 - 2021 may not have been identified yet

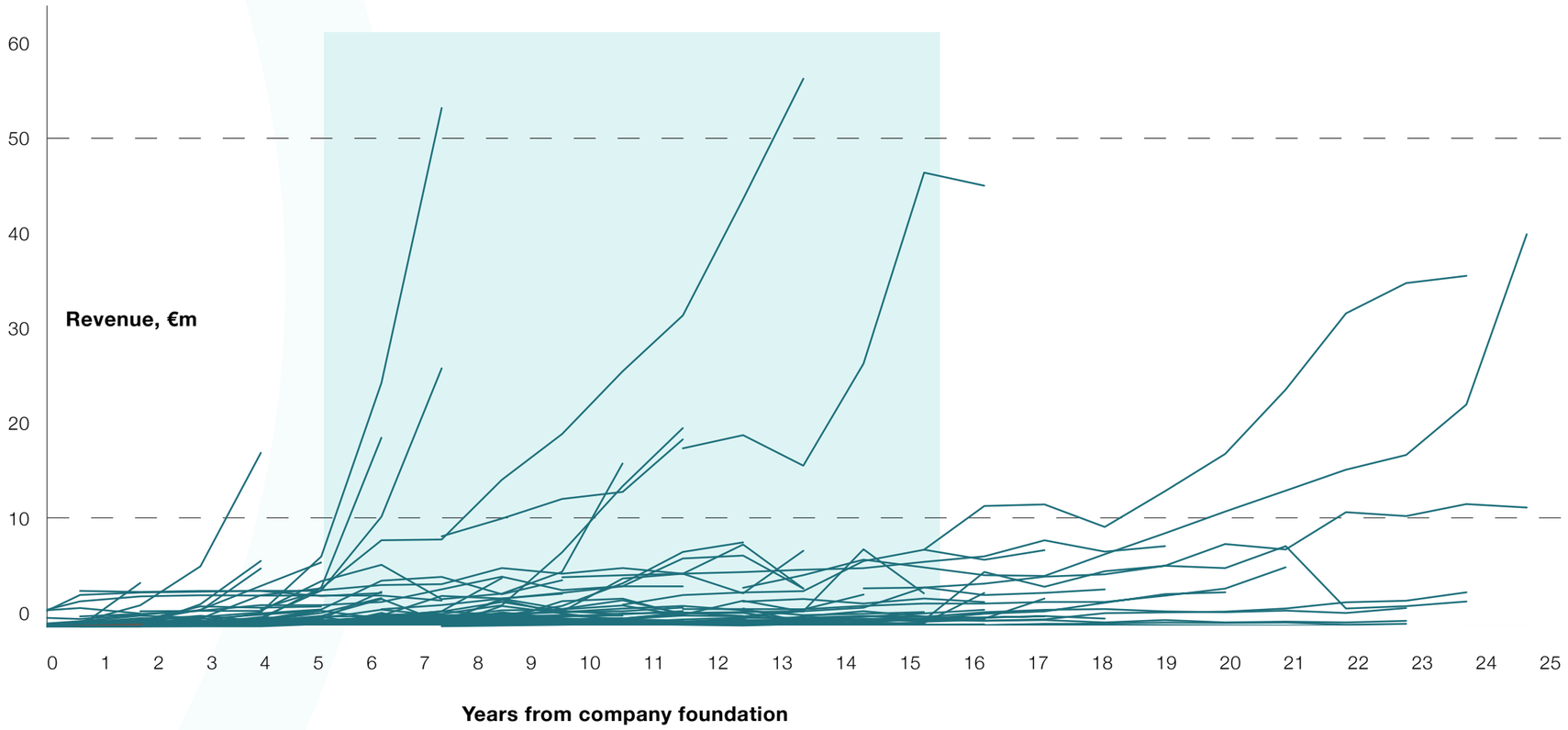
Innovation takes time

It takes 5–15 years even for the fastest and most successful deep tech companies to scale the business

For some categories scaling takes longer than for others

- e.g. health & biotechnology and optics companies on average reach €1 million in revenue only after eight years from founding the company

Revenue development of individual deep tech companies

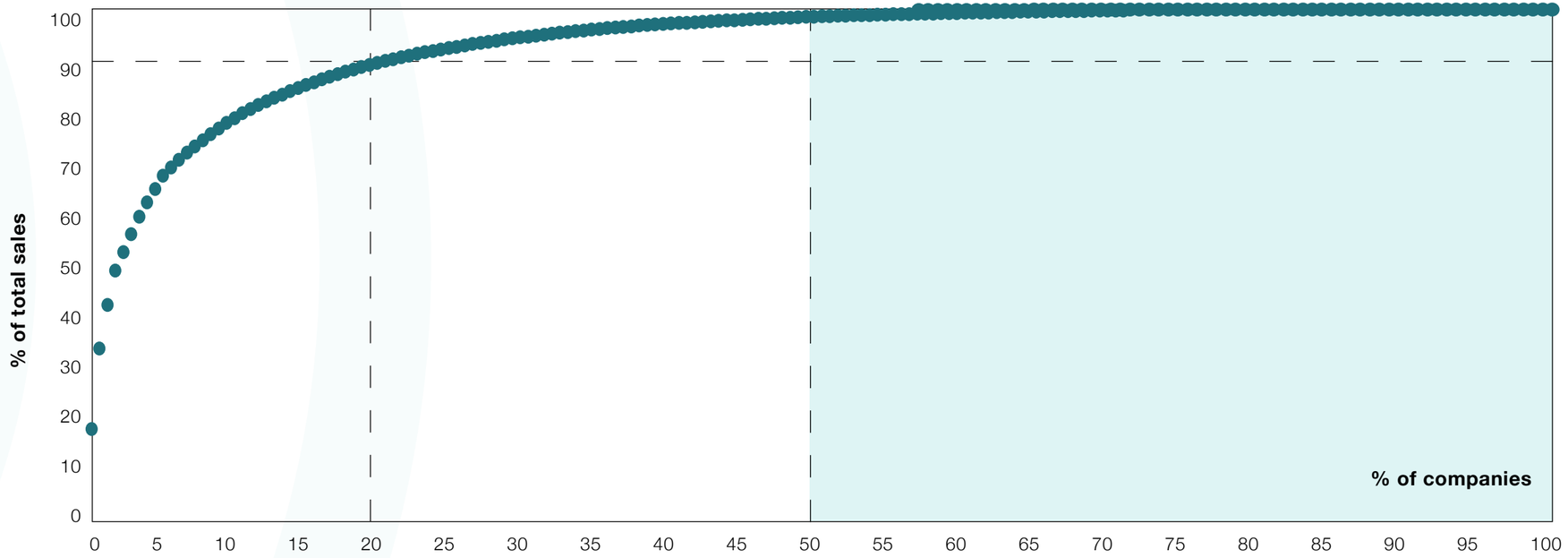


Outcomes are heavily concentrated for deep tech

Top 20% of deep tech companies generate over 90% of total sales

Approximately 50% of companies have not yet generated revenue

Pareto distribution of sales



The dilemma of large investment rounds

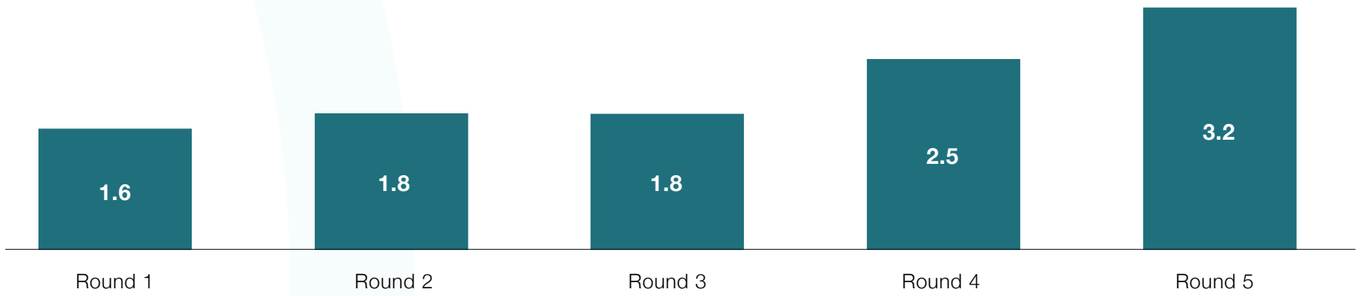
Finnish investors don’t have enough capital to fund larger investment rounds

Syndicate sizes increase considerably as the round size increases

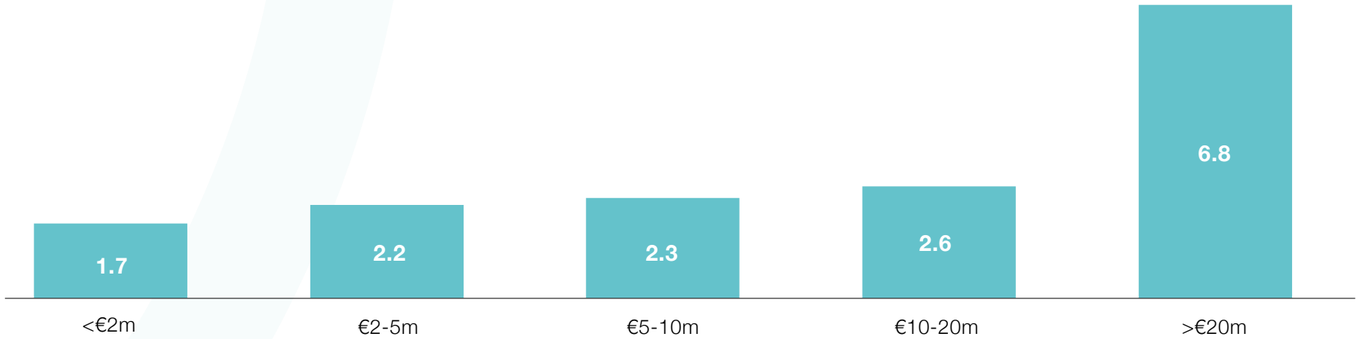
Finnish private funds struggle to fill larger rounds as the typical ticket sizes are up to €2–3 million

There is a lack of clear lead investors in large rounds (>€20m). This complicates fundraising, and leads to significantly larger syndicate sizes

Average syndicate size by round number



Average number of investors by round size



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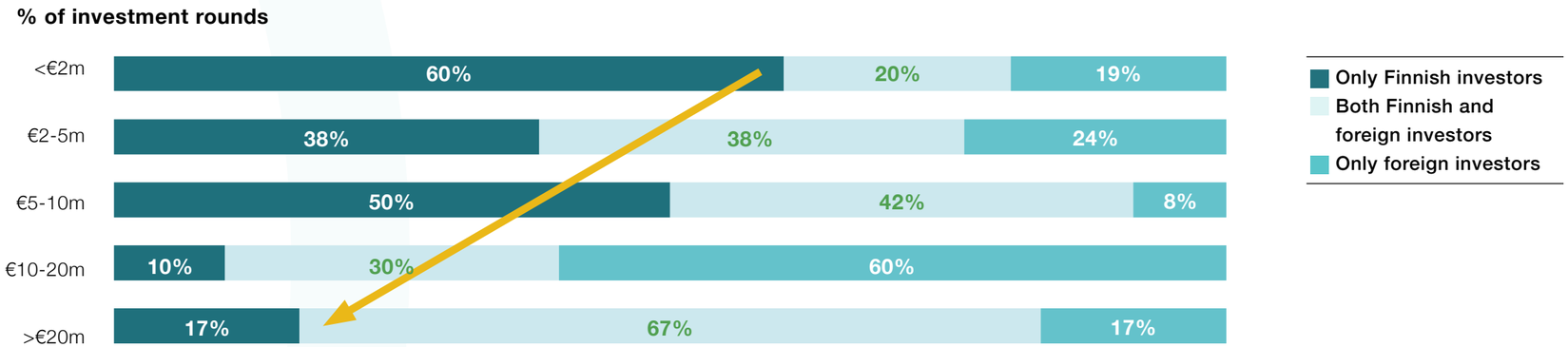
All investor types are needed as syndicates become more diversified when the round size increases

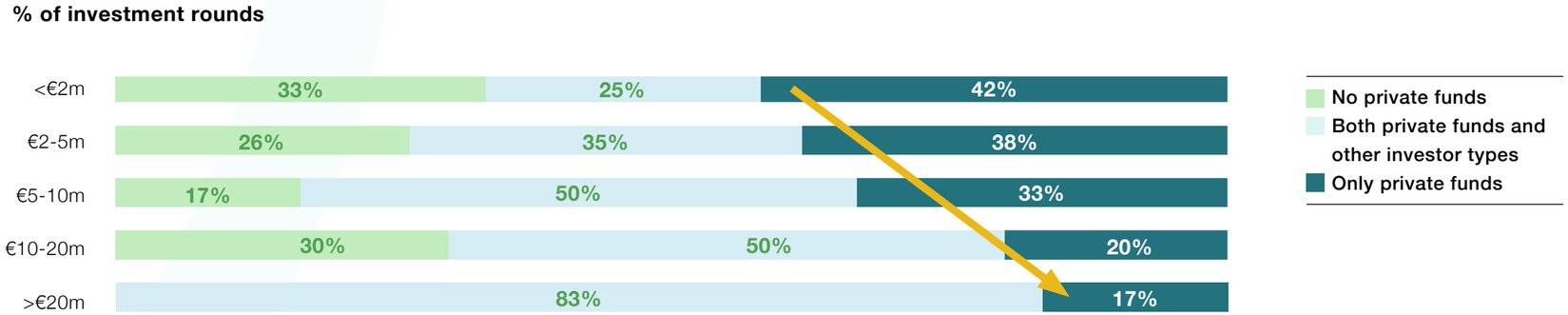
Foreign investors have more emphasized role in larger investment rounds

Average syndicate composition by round size



The capability (or will) of private funds to fill the larger rounds decreases entirely as the round size increases

Average syndicate composition by round size



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See more in the broader study version!

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