Startup Fundraising

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May 2021, draft / work-in-progress. Consume with caution.

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14. Startup Fundraising

Startups need funding to start and grow their business. At a minimum, there are people, and people need to eat. In addition, you may have other expenses like office space, computing resources, and so forth.

There are two main funding sources:

- Public grants and
- Venture capital.

In this chapter, we discuss only these two sources. There are other less common funding sources like loans and specialized financial instruments, but they are usually not available to a startup.

From the perspective of the funding sources, there are two relevant phases of a startup:

- Before founding and
- After founding.

Public grants are available both before and after founding, while venture capital is only available after founding. Each of these phases has its own structure.

14.1 Fundraising plan

Before you acquire funding, you need to know why and how much you need. For this, you need a fundraising plan. The fundraising plan is part of your strategic plan of how to start and build out your business. It captures how you plan to raise the funds for your venture.

A fundraising plan correlates your cash inflows with outflows to make sure you don't go bankrupt but rather grow your business at the speed you desire. The fundraising plan is mostly for you. You may have to show it to your board as part of explaining your growth strategy though. Unlike a business plan, it has no specific sections, as there are little to no outside expectations.

You should keep it simple, and make it mostly a time-line based on your expected and desired cashflows.

14.2 Public grants

A public grant is funds (the grant) provided to you by a non-profit organization, governmental or not. A grant is always a gift, so the recipient of the grant does not have to pay anything back. The amount of money provided through a grant is cost-based: You propose to do some work and ask to receive, as a grant, the funds needed to perform this work. This is in contrast to raising venture capital (or selling a product), where you are trying to get compensated for the value that you are providing and not the costs incurred to create that value.

There are many different types of public grants. They all share the same logic, though.

14.2.1 The logic of public funding

There are three main parties to a successful public grant:

- The grant program sponsor,
- The program manager, and
- The grant recipient.

The program sponsor is the grant giving institution which provides the funds. They may be public agencies like ministries or private non-profit organizations. In Germany, common public grant givers are the DFG, the BMBF (ministry of education), and the BMWi (ministry of industry). Examples of non-profit organizations are the Klaus Tschira Stiftung, the Bertelsmann Stiftung, and the Bill and Melinda Gates Foundation.

A sponsor usually doesn't want to deal with individual grant applications and one-off topics. Rather, they have an agenda on what type of work they want to fund. For this, a sponsor defines a program and how much they want to spend on projects within that program. Some programs are large, for example, for sponsoring quantum computing research, and some are small, usually on niche topics. To operate a program, the sponsoring institution usually employs the help of a program manager.

A program manager is an organization which operates a program on behalf of a grant program sponsor. A program manager handles all the operational details, from marketing the availability of the grants, through reviewing and deciding on which applications to accept and fund, all the way through disbursing the funds and controlling its use. Example program managers in Germany are the VDE/VDI, AiF, and FZ Jülich. The DFG is a special organization which is both a grant program sponsor and program manager.

The grant recipient is, hopefully, you. To receive a grant, you write an application and submit it to the program manager for review and approval. A grant application lays out the work you want to do, the funds you need to do it, and why your project is particularly valuable and helps the grant sponsor achieve their goals as laid out in the program.

14.2.2 The grant application

A grant application proposes almost always a project, which is work you promise to do within a given time-frame (the project start and end dates). As you write your application, you need to focus on the program to which you are applying. Your application will only be viewed favorably, if it clearly shows how the proposed work will advance the program's goals. The art of writing grant proposals is therefore your ability to align your goals with the program's goals, and describe this in clear terms.

The program manager is usually your friend. The program manager wants to receive the best possible grant proposals. They usually want to spend all the money in the program, so that they can report back to the program sponsor how successful they were in turning the program goals into reality. Therefore, you should not be shy in engaging with the program manager and asking as many questions as possible about what the program is about, how well it might fit your own goals, and how to write the best possible proposal.

To increase the chances of success, you should try to learn as much as you can about the evaluation criteria that will be applied to your proposal. This is about the only topic where a program manager might get cautious in communicating what they do: They don't want to possibly get sued because of something they told you that turned out not to be true. You can measure the competitiveness of a grant program by how defensive a program manager is about their evaluation criteria and whether you will receive detailed feedback (the evaluation or review) as to why you succeeded or failed.

Writing successful grant proposals is different from raising venture capital. Your professor will have significant experience with this, as do some companies which offer commercial grant writing services. You should try to tap into their experiences.

14.2.3 Project execution

With an approved grant, the project can commence. The program manager disburses funds only upon request and in batches, so you have to ask for the money repeatedly. You do so for an upcoming time period only, for example, for the upcoming quarter. Sometimes you can only ask for the funds after you spent them, getting

reimbursed after the fact.

The grant is for specific work that you promise, so you may have to report on your progress and provide a final project report at the end. It is best to plan for this from the beginning and collect the relevant information as the project progresses.

14.3 Before founding

In the run-up to incorporation (founding of the company), the budding startup goes through the following three main research-to-startup phases:

1. Research. In this initial phase, a professor, with the help of their Ph.D. students, performs research and development; a potential startup is usually not front and center.
2. Exploration (of potential). In this phase, the startup has not been founded yet, and you are investigating whether the research can be turned into a startup.
3. Incorporation. In this phase, while still at the university, you decided to start a company, and you are preparing and then founding the company.

After incorporation, the company operates as a going concern, for which we discuss fundraising in the section on After founding.

In these early stages, you can only get public funding. (There is no company yet which could acquire venture capital.) We don't discuss search funds or other vehicles, because our topic is research (from university) to startup, not the individual entrepreneur.

Public funding, as explained, requires a successful grant proposal. You have to submit the grant proposal through a professor and the university, which will then become the recipient and disburser of funds in case of a successful proposal.

This is a triple-win: The program manager provides the funds to a trusted party, the university. The professor and the university can add these funds to their fundraising track record. And you will eventually be paid to carry out the work you wanted to perform all along.

14.3.1 Research

Acquiring research funding is the task and prerogative of your professor. You are probably not even thinking about a startup yet. The professor may involve you in the writing of a grant proposal, but the proposal is about research and not a startup.

You are probably a Ph.D. student as well, in addition to being employed by your professor and the university. Your primary goal should be to perform research, in line with the grant that is funding your salary, publish research articles, and eventually submit a dissertation for promotion to the doctor title.

In Germany, there are a large number of public funding sources; they can be split into

- Basic research programs, for example, as provided by the DFG,
- Applied research programs, for example, as provided by the BMBF, and
- Research-to-industry transfer programs, for example, as provided by the BMWi.

This gives you a rough idea only, as program sponsors can't generally be neatly classified like this. As a consequence, a professor is listening on many channels to be up-to-date on possible research funding opportunities.

14.3.2 Exploration

Whichever way it may get triggered, at some point of time during your research project, you and your colleagues may start wondering whether your work has the potential to become a product that will improve the world (and earn you a small, large, or blockbuster living).

Exploration funding is public grants that allow one or more people, typically at a university, to investigate whether their work can be turned into a startup. You should only enter this phase after or near the end of your doctoral research. Exploration funding does not expect you to incorporate; this is the next phase. The purpose of exploration funding is simply to assess the commercial potential of your work.

In Germany, there are several ways of funding the exploration phase. There is less funding available, though, than for research in general.

The most notable funding is available through BMBF's long running VIP+ program. The following table lists the key requirements of a grant proposal to this program.

Name	VIP+ (BMBF)
Purpose	To explore commercial potential of scientific research
Amount	Up to €1.5M
Duration	Up to three years

The VIP+ program is the first program researchers hear about when they investigate commercializing their research. As a consequence, the program is heavily oversubscribed (or underfunded, depending on your perspective). I don't think getting rejected says much about the commercial potential of your research.

If your professor has your back, you may also be able to utilize applied or transfer-oriented grants for exploring the startup opportunity, as long as you are fulfilling the grant's goals. An example are BMBF's former MTI now START grants, which come in two variants: Before founding and after founding. They often are highly focused on a niche topic of particular interest to the sponsor, though.

If everything fails, your professor may employ you using their reserves or other university funds.

14.3.3 Incorporation

If, after exploration, you decide to go ahead with your startup, you can acquire incorporation funding.

Incorporation funding is public grants that get your idea, team, and assets ready for incorporation. Thus, when you apply for such funding, you must not have incorporated yet, and you must incorporate during the duration of the project. As a consequence, the incorporation project has a before incorporation and an after incorporation phase. In both phases, the grant money is run through the university; it cannot be transferred into the startup after incorporation.

In Germany, the most notable funding is available through BMWi's long running EXIST Forschungstransfer program. The following table lists the key requirements of a grant proposal to this program.

Name	EXIST Forschungstransfer Förderphase I (BMWi)
Purpose	To create of a startup out of scientific research
Amount	Up to €1M

Duration	Up to 18 months
People	3-4 people

Like with exploration funding, your professor may be resourceful and fund you in other ways, if your grant proposals fall through.

14.4 Venture capital

Venture capital is funding provided to you in return for giving up equity in your venture. Equity is stock, that is, ownership in your company, so you are effectively selling a small piece of your company. Venture capital is mostly provided by individual people, then called business angels, or venture capital firms.

14.4.1 The logic of venture capital

There are only two main parties to a venture capital investment:

- The investor (business angel, venture capital firm) and
- You (the startup).

There may be additional relevant parties (lawyers, universities, facilitators) to a deal, but the key transaction is between the investor and you.

You should only seek outside investment if you need it to grow and have no other options, and you will only receive such investment if you can show how to grow and increase the value of the company. Venture capital is the most expensive money you can get.

Investors provide funds, because they want to receive a return on investment that is typically a multiple of what they put in. Investors have an appetite for risk, while you, the entrepreneurs, are often more conservative. This difference in risk profiles is a main cause of potential strife between entrepreneurs and investors over the direction of the company and an important reason not to accept venture capital if you can avoid it.

Business angels typically invest their own money; they have no program you can apply to.

Venture capitalists invest other parties' money; they also have no program you can apply to. Venture capital firms raise their own funds in rounds and put them into an investment fund. If you receive an investment from a venture capital firm, it will come from such an investment fund. Sometimes, investment funds have a purpose, similarly to a public program, and you will only be eligible if you help fulfill that purpose.

Investors (and possibly you) receive their return on investment at the so-called liquidity event or exit. Until then, their investment is typically locked up. There are different types of liquidity events:

- Liquidation (including bankruptcy). The company is shut down and whatever assets may be left is distributed to stakeholders (employees, lenders, shareholders, …)
- Trade sale. The company is sold to another company, and the sales income is distributed to the shareholders of the company.
- Initial public offering (IPO). The company continues to operate as a going concern and seeks new investment from the public markets by enlisting on a stock exchange.

At or after an IPO, all shareholders of the company can typically sell some or all of their shares, achieving liquidity of their hitherto locked-up investment.

14.4.2 A venture round

Venture funding proceeds in rounds, traditionally called seed, series A, series B, … round, in that sequence. Each round, the startup receives an investment that increases its value, and the investors receive the stock commensurate with the increase in value. As the value of the company increases in between rounds (hopefully), the next investment amounts increase as well.

The key parameters of a venture round are maintained in the so-called term sheet, on which the investment negotiations focus. After an agreement was found, the term sheet will be turned into a (significantly more lengthy) contract by the supporting lawyers.

The two key parameters are the investment amount for how much equity: If the value of your startup is €4M before investment (so-called pre-money valuation), and an investor provides a 1M investment, then the value of the company is €5M after the investment (so-called post-money valuation). The total share of equity that the investor should receive is €1M/€5M = 20% of total equity. The existing shareholders aren't selling their shares, rather the total number of shares will be increased to allow for the 20% equity allocation to the investor.

There are many other conditions an investor may want to push on the startup, and they can have a significant impact on outcome. If mechanisms like share classes, return multiples, and liquidity preferences are unfamiliar to you, you should seek advice. On the other side of the table is a person who is doing this for a living, while you may be doing it for the first time. We refer you to the current press and of course your trusted professor to help you understand what the various terms mean. In general, simpler is better.

14.4.3 The funding pipeline

Different rounds follow a different logic. Most notably, the evaluation and decision criteria that an investor uses to decide whether to make an investment change with the rounds. In the beginning (pre-seed, seed) the team and the idea is front and center, because there is little else to evaluate. Over time (series A, B, C, …), as the products start generating revenues, quantitative measures (users, customers, revenues) become more important. Investors specialize by round, so each round you may be facing different people.

An experienced investor has expectations about the typical development of a startup, including milestones to reach. We discussed some of these in the chapter on startups and the different phases they go through. If you fit the pattern, you are probably doing well.

In your strategic plan, you should not only look towards the next funding round, but also the whole pipeline as a sequence of rounds. Understanding how the current round has an impact on future rounds is important to not navigate yourself into a corner.

The two main conflicting forces are

- How much to raise (which determines how long until the next round)
- At what valuation (which determines the equity you give up).

It would be a mistake to think that a higher valuation is always better. A high valuation in one round sets high expectations for the valuation of the next round, and therefore leaves you little room for error. If you know you can hit ambitious targets, a high valuation may be fine, but in general it is better to leave yourself some wiggle space. On the other hand, of course, you don't want to give away too much of the company for too cheap a price.

Assuming that no funding is available, the following table correlates the orders of magnitude between parameters on a term sheet within one round and along the sequence of rounds:

Round	Valuation	Investment	Equity Loss	Runway
Pre-seed	€500K	€50K	9%	3-6 months
Seed	€2M	€500K	20%	12-18 months
Series A	€10M	€2.5M	20%	12-24 months
Series B	€85M	€15M	15%	24-60 months
...				

These numbers are from the German funding ecosystem. The Silicon Valley ecosystem affords higher numbers. There can be significant variation in your case. Revenues stretch your runway until the next funding round or break even.

14.4.4 Public vs. private

Public funding and venture capital don't contradict each other. You can get both. In fact, public funding often pushes you to raise venture capital, and most investors will look favorably at you acquiring public funds, because it stretches their investment as well.

In the early stages, acquiring public funding is typically easier than acquiring venture capital. The effort it takes to successfully write public grant proposals and manage them pales when compared with connecting to, convincing, acquiring, and maintaining the relationship to venture capitalists.

Public funding only plays a role as a complement to pre-seed and seed rounds. Already series A investments are likely to go beyond what public funding can provide you.

14.5 After founding

After incorporation, you can not only acquire public funding, but also venture capital.

14.5.1 Chartering the course

How much to raise and why is determined by your strategic plan. That plan in turn depends on the preferences of the founders and the size of the market the startup is after.

- Life-style startups are created by founders who want to earn a living and have limited ambition to make it big; they are unlikely to ask for nor receive venture capital. They may well receive public funding to get started, though.
- Growth-oriented startups are startups that see a market opportunity and want to take as much advantage of it as they can, possibly growing into dominating that market. They may need venture capital for their growth.

Not every growth-oriented startup will receive venture capital. If the market is not convincing to venture capitalists, they may pass on funding the startup. A market is not convincing, foremost, if its size is too small. Other factors like high barriers to entry may also keep venture capitalists away.

If growth is on your mind, you should aggressively try to acquire venture capital to invest in dominating your market. Depending on your market's size, it may be a long way until you break even and become profitable. The need for venture capital and the loss of equity to new investors is offset by the commensurate

growth in value of the company.

In the early stages of a new startup, both public funding and venture capital can play an important role.

14.5.2 Public funding in the early stages

Before founding, public funding can only go to the university. After founding, public funding can go to the university, or the startup, or both. Universities will get 100% of their costs reimbursed, while startups will often receive only a fraction of their costs (for example, only half).

Countries are often prohibited by international treaties to subsidize their economy, and therefore public grants to companies, including startups, often face hurdles and constraints that you have to work with. In particular, the European Union prevents its member countries from subsidizing their startups. You therefore have to read the fine-print in public calls for grant proposals, in particular to see whether the de-minimis rules apply or whether administrative approval beyond the program manager is needed.

There are three types of public funding useful to startups:

- Bridge funding is funding provided to you near the end of a phase to help you reach the next one.
- Growth funding is funding to help you grow one or more stages.
- Project funding is research and development funding for particularly risky projects.

Bridge and growth funding target the early stages of a startup and are only available to the startup.

Project funding is generally possible at all times and can be awarded to the startup only or to the university and the startup as part of a joint project. Larger consortia of multiple companies and universities are also possible, but beyond the scope of this chapter.

14.5.2.1 Bridge funding

Bridge funding, or follow-on funding, is provided to you to nudge you into a desired direction, for example, to move from public funding to venture capital.

If you received EXIST Forschungstransfer Förderphase I, for example, you can apply for EXIST Forschungstransfer Förderphase II funding, which will reward early funds you received by adding to them.

Name	EXIST Forschungstransfer Förderphase II (BMWi)
Purpose	To get ready for outside investment
Constraints	At least €25K original capital contribution (GmbH), at least €60K in the bank
Amount	Up to €180K
Duration	One time payment

Helpful, though not direct funds to you, is support for business angels that makes investing in your startup easier for them. The EXIST INVEST program supports investors by adding to their funds when investing into your startup, and so does the European Union's EAF program. Usually, you can't become an investor into a startup where you are a founder already.

14.5.2.2 Growth funding

The German government recognized that the Silicon Valley funding ecosystem puts their startups at an advantage. Next to the already mentioned funding programs, most notably the BMWi's EXIST program, there now is the whole new SprinD agency to fund startups with breakthrough innovations that would

otherwise have to leave Germany (or falter).

Name	Projekt (SprinD)
Purpose	To realize the innovation's potential (yes, that general)
Amount	€1M+

At this stage, little is known, as the first batch of project funding has yet to arrive.

14.5.3 Venture capital in the early stages

Getting in touch with investors can be difficult, as there are more entrepreneurs seeking investment than there are investors. You'll have to be plucky, use your professor, your networking skills, and may have to seek out matchmaking events like business plan competitions.

Fundraising in the early stages is a difficult psychological game, as you have little to provide but the strength of your personalities and ideas. If you have a product, your situation improves, but without customers, your value remains unproven. You'll have to work many different potential investors in parallel to avoid being at the mercy of one or none at the end of the first fundraising round.

14.5.3.1 Roles of investors

Investors can be split into

- Lead investors who take the leadership in an investment round and
- Co-investors who complement the lead investor with specialized knowledge and funds.

If you convince a lead investor, they may bring on board their co-investors, to help them in the evaluation of the opportunity (your startup) and shoulder some of the financial investment. Business angel organizations often work like that, allowing business angels to band together and stem an investment opportunity.

14.5.3.2 Public investors

Surprisingly, not all investors are for-profit private investors like business angels or venture capital firms. Some investors are public investors, who use public funds and have a mission that may include, but is not limited to, returning an investment to the funds given to them.

Public investors are almost always co-investors and not lead investors. They wait for a lead investor to find a suitable target or for you to bring a lead investor with your startup as their target to them. Then, they may co-invest.

The most prominent public investor in Germany is the High-Tech Gründer Fond (HTGF).

Like all VCs, the HTGF invests from funds that it raised. In its fifteen years of existence, it has raised three funds. The most prominent investor is the BMWi, but a garden variety of German companies have also invested.

Name	High-Tech Gründer Fond Investment
Purpose	Venture capital co-investment
Constraints	Seed stage, younger than three years old
Amount	Up to €1M (seed), up to €3M (total)

Some states complement country-wide operating public investors with state-level investors. The German state of Bavaria, for example, invests into high-tech startups through Bayern Kapital and into established mid-size companies through Bayerische Beteiligungsgesellschaft (BayBG).

Bayern Kapital provides multiple different fund series that invest in the different stages of a startup. For example, Seedfonds Bayern invests in the earliest possible stage after founding.

Name	Bayern Kapital
Fund	Seedfonds Bayern
Constraints	Seed stage
Amount	Up to €1M

14.5.3 Public project funding

In addition to bridge and growth funding, startups can utilize traditional public project funding.

14.5.3.1 Types of public project funding

There are two different purposes for such funding. They are to fund research and development that is so

- Risky that the company would not undertake it without help, or so
- Relevant and desirable that a program sponsor wants to push the topic.

In the first case, the company (not necessarily a startup), would not undertake the research and development if it would not receive the project funding. It is not necessary that the program sponsor considers the content of the proposed work particularly desirable; the company only needs to show that the continuation of this work will be beneficial to the company, for example, by establishing a major new feature set for an existing product.

The BMWi's Zentrales Innovationsprogramm Mittelstand (ZIM) provides several programs that are helpful to small companies to perform risky research and development that without the grant wound not be undertaken. Companies can propose single-party projects (ZIM-Einzelprojekt), or they can propose joint projects with a university (ZIM-Kooperationsprojekt).

Name	ZIM-KOOP (BMWi)
Purpose	Sponsor risky R&D that otherwise would not be undertaken
Constraints	One company, one university
Amount	€500K split between parties

Sometimes there are dedicated shorter-lived programs available like the recent BMBF's START-interaktiv: Interaktive Technologien für Gesundheit und Lebensqualität program, to which startups can propose innovative projects. The START-interaktiv program is an example of a program with a purpose, as your proposed project has to be about novel ways of how humans interact with technology in the health and quality-of-life domain.

Name	START-interaktiv (Modul 2)
Purpose	Sponsor startups for desirable R&D in human-computer interaction

Constraints	One company, one university
Amount	€500K split between parties

Tracking all current and upcoming opportunities can be a lot of work. There is no shame in getting help, so you should tap into the local entrepreneurial support at your university.

14.5.3.2 The role of the university

For a startup, the value of a university, or more precisely: an engaged professor, is manifold. Most notably, the university is a channel of resources:

- Financial resources. A university might
    - Seed the original research,
    - Facilitate the startup incubation,
    - Make possible R&D projects as a partner
- Human resources. A university often helps with recruiting, in particular in the software industry, where engineering talent is hard to come by.
- Other resources. A university may offer access to expensive equipment or relevant marketing channels or organizational memberships that are helpful to the startup.

Universities may be large organizations, but they are highly decentralized in that each professor runs their own king- or queendom. This decentralization gives individual professors significant opportunity to act, in particular to act in support of startups they'd like to see prosper.

14.5.4 The later stages

A high-growth startup will require substantial investment to keep growing, if it is following a market dominance strategy (which it may have to in a winner-takes-all market). Public funding is generally too small to have an impact here. Therefore, you need to turn to later-stage venture capital funding, as typically provided in series B, C, or even D and E funding.