Startups and Funding

A comparative analysis of Amsterdam and Stockholm

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1.   Introduction

Many people in their daily lives make use of things that were invented by startups. Whether it is Microsoft software on their computer or an Apple phone, both are from once young innovative companies originating in Silicon Valley California. More recent examples are the taxi service Uber and vacation home platform Airbnb, that both disrupted their respective industries. Even though Silicon Valley is a turbulent environment for startups, the companies that have managed to survive and grow have created considerable wealth for the region (Hamel, 1998; Kenney, 2000). The type of innovative technology company of Silicon Valley was later recreated on a wide scale in Europe. Moreover, some centres of startup activity have come up. In the European Startup Monitor 2015 (GSA, 2015) the economic impact of startups was measured. The report showed that European startups are good for employment, as they generally create twenty jobs within 3,5 years.

However 18% of the startups, in their definition up to nine years old, have not generated revenue (GSA, 2016). The European startups also have problems achieving growth and raising capital. This is especially recognized by startups in the Netherlands (GSA, 2015). The public-private action programme StartupAmsterdam has been initiated in a coordinated effort to establish the position of Amsterdam as European startup hub (StartupAmsterdam, 2015). The initiators experienced a shortage of fast growing startups, which are considered vital for the urban economy. An essential aspect of this shortcoming is a lack of venture capital, together with a lack of international growth mentality (StartupAmsterdam, 2015). For startups with growth intentions bank loans lack in providing sufficient funds (Colombo & Grilli, 2007). Therefore, these startups often turn to the venture capital market. Stam (2010) claims that the availability of venture capital is unevenly distributed geographically. Being in 'the wrong place' then would hamper the development of a startup.

To be able to improve the conditions for startups in Amsterdam, it is important to understand the dynamics of funding. In order to do so, a comparison will be made between Amsterdam and Stockholm. Rather than startup hubs like London and Berlin, the size of the domestic market in Stockholm is similar to Amsterdam. Because of the relatively small size of their domestic markets, the expectation is that startups in both cities are forced to internationalize in a similar way. In comparison with the Netherlands, Sweden however saw approximately twice as much VC going to their startups. Around one billion euro in 2015 (Lundell, 2016) compared to 429 million in the Netherlands (Van

Gool, 2015). This while Amsterdam has around twice as much startups, 1049 compared to 551 on AngelList (2016a; 2016b). Stockholm could therefore possibly serve as an exemplary case for Amsterdam and its startups.

1.1 Research questions

This study will focus on startups in Amsterdam and Stockholm. The startups will be assessed on the extent to which they have attracted funding. Different features of the regions and the startups are analysed to find what determines the funding for a startup.

To what extent do contextual and firm characteristics determine the funding startups in Amsterdam and Stockholm attract?

Sub questions:

- What are startups?

There have been plenty of studies that mention startups, but virtually all define them differently. Looking at previous studies, the most important features are taken and subsequently an operational definition for this study will be formulated.

- What types of funding can startups attract?

As shortly mentioned, venture capital is more suited for startups than conventional bank loans. The distinguishing features of venture capital should be addressed, together with other types of investments in startups.

- What types of funding do the startups in Amsterdam and Stockholm attract?

There are more types of investors than venture capitalists. Some investors focus on companies in beginning stages and some on later stage companies. An insight into the types of funding of startups in both cities can benefit in the understanding of the differences between both cities' startups.

- Where do the startups in Amsterdam and Stockholm attract funding from?

Startups in Sweden attract twice as much venture capital as startups in the Netherlands. However, the data does not show where the funding comes from and where the funding goes to within the country. The geography of the funding can help in explaining the differences between startups in Amsterdam and Stockholm.

- What characteristics determine whether a startup attracts funding or not?

The factors that determine whether a startup has funding will be identified by using a statistical model with variables on the startups and the cities. Subsequently, it will be analysed whether the relationships differ for both cities' startups.

- What characteristics determine the amount of funding a startup attracts?

Taking all the startups that received funding separately, it will be analysed what variables determine the height of funding received by the startups. Besides variables on the startups and the cities, variables on the investors will be used. On the basis of this information can be established what the ideal circumstances are for receiving more funding. Also will be analysed whether this differs in both cities.

- What is the role of funding in the internationalization of startups?

The assumption is that funding is an essential aspect of growth and therefore also for international growth. The last analysis will seek connections between variables on funding and internationalization variables.

1.2 Set-up

In the second and following chapter, the theoretical framework, relevant literature will be covered. The chapter is split up in two paragraphs; literature on (business) characteristics of startups and literature regarding funding. The theoretical framework concludes by presenting the conceptual framework and hypotheses for the subsequent analysis.

In the startup paragraph, previous studies will be examined with regards to how they conceptualize the startup phenomenon. Recurring themes that are of relevance for the study will be highlighted. Lastly, literature on internationalization will be discussed. Because internationalization is considered an important aspect in the development of a startup.

The paragraph on funding first outlines the different types of funding. Subsequently, the stages of funding will be discussed. Lastly, the determinants of funding will be identified in the literature. The focus is specifically on contextual determinants and firm characteristics that affect funding.

The third chapter consists of the analyses. The chapter starts with describing the methodological foundations of the analyses. The differences in the Amsterdam and Stockholm contexts will then be outlined. Followed by a description of the sample; how it was created and what the data tells. The remainder of the chapter focusses on the three main analyses, starting with an introduction of the variables.

The first main analysis is a binary logistic regression analysis; to find what factors determine which startups do a do not attract funding. The subsequent analysis, a linear regression analysis, examines the factors that determine the height of the funding. The chapter ends with bivariate analyses, geared to find possible relationships between funding and internationalization.

In the final chapter, answers on the research questions will be formulated. The results will be discussed for the implications for future research and policymakers.

2.   Theoretical framework

Existing literature can help guide the analysis of the study. A broad array of literature will be covered in this chapter. The chapter is organized in three paragraphs; the first paragraph mainly covers literature on startups, the second focusses on funding, and the last one shows the parts of the literature that will be used in the analyses in the next chapter.

2.1 Startups

This paragraph explores literature on startups. The aim is to clarify the phenomenon and its selected features. The first paragraph covers a broad list of features of startups, while the second paragraph focusses solely on internationalization.

2.1.1 Startup characteristics

Literature on startups can be traced back to the eighties (Stuart & Abetti, 1987) and interest in recently founded (technological) companies has existed even longer (Cooper, 1971). Throughout the years startups have been covered in numerous articles, from different points of view and under different names. An illustration of the latter is the discussion on whether to use the term 'startup' or 'start-up' (Collins, 2014). In this study the term startup will used. Following 'startup preachers' from Silicon Valley, Steve Blank and Eric Ries (Blank, 2011; Ries, 2011). This subparagraph will characterize startups on the basis of recurring features in literature. Startups have a certain *lifespan*, leverage *technology*, have *innovative business models,* suffer from *uncertainty,* are *designed for growth,* and lastly have an *international market*.

Lifespan

The term startup in more recent studies refers to a special kind of company. Older studies used the term 'start-up' simply to describe newly founded companies (Cooper, 1971; Audretsch & Acs, 1994; Davidsson & Henrekson, 2002). Although emphasis has changed, it is still common practice to use a specific timespan after founding to define a startup. Some studies have a strict limitation, only considering companies with maximum two years of existence (Cassar, 2004; Koski & Pajarinen, 2012). Koski and Pajarinen (2012) also use a sample with startups that are maximum five years old. Referring to the OECD definition of young high-growth firms and business subsidy policies, both to an extent apply an age limit of five years (Koski & Pajarinen, 2012). Surprisingly, many studies even apply an age limit of ten years (Hellmann & Puri, 2002; Van Dijk et al, 2015; GSA, 2015).

Arguably less biased are the empirically founded lifecycles of startups. Marmer et al (2012b) established four stages which a startup goes through (later more). A company seizes to be a startup when it has progress through these stages, evidenced by reaching certain thresholds. The Marmer stages are partly determined by milestones based on "The Four Steps to the Epiphany" of Blank (2011). The latter recognizes certain dynamics that apply for startups that aim to become successful companies. The authors also determined four types of startups, which all showed different 'startup lifespans'. The time as startup differed, depending on the type, from on average 16 months to 64 months (Marmer et al, 2012b).

Technology

Startups are inextricably linked with ICT, many studies therefore use terms as internet startups (Zook, 2002; Chang, 2004; Spiegel et al, 2015), software startups (Mann & Sager, 2007; Bosch et al, 2013) or high-technology startups (Manigart & Struyf, 1997; Deeds, 2001; Bruton & Rubanik, 2002). However, the trend has become to include a broader group of startups and place less emphasis on superior technology.

Marmer et al (2012b: 10) define startups as: *"temporary organizations designed to scale into large companies".* This definition is derived from definitions of Ries (2011) and Blank (2011). Lalic et al (2012) also derive their definition from Ries (2011). They argue that the scalability of a startup is conditioned by having a technology-based standardized product or service that potentially meets the requirements of customers worldwide. Processes of globalisation have made consumer preferences worldwide more homogenous (Knight & Cavusgil, 2004). The homogenization is in particular apparent for the use of technology-based products and services. On the one hand, this is an advantage for startups as they have a large potential market. On the other hand, however, there are many (international) competitors and technologies are superseded at a fast rate (Knight & Cavusgil, 2004; Tanev, 2012). This forces startups to differentiate themselves. Startups are therefore often associated with innovation.

Innovative business models

Innovation is, in entrepreneurship literature, understood as applying novel concepts in a business (Schumpeter, 2000; Deeds, 2001). A recurring feature in reports of startups is that the companies implement leading technologies, products and services (Tanev, 2012; GSA, 2015). Other authors

(Freeman & Engel, 2007; Van Dijk et al, 2015) state that startups also differentiate themselves by having innovative business models. Those authors however lack in pointing out what this entails. The characterisation of different types of startups by Marmer et al (2012b) can help understand this element of startups.

The four types of startups distinguished by Marmer et al (2012b: 7-8) are the Automator, the Social Transformer, the Integrator and the Challenger. They are distinguished on the extent to which the startups depend on marketing or sales. The Automator and Social transformer, for instance Google and Facebook, are depended on continuous users and thus rely on marketing. They create revenue by monetizing the users, for example through advertising revenue (Sun & Zhu, 2013). The other types, the Integrator and the Challenger, are more dependent on sales. The Integrator generally provides subscription based products and services to smaller customers. The Challenger operates in complex markets and is dependent on large transactions (Marmer et al, 2012b).

Marmer et al (2012b) argue thus that it is no longer fitting to distinguish startups by those that target consumers and those that target businesses. However, the European Startup Monitor (GSA, 2015) shows that the majority of startups classify themselves as business-to-business (B2B). Furthermore the report of Van Dijk et al (2015) shows that B2B startups are more successful (measured in revenue). A business model consists of more aspects than the aforementioned target groups and ways of creating revenue (Morris et al, 2005; Osterwalder & Pigneur, 2009). It is hard to distinguish what makes business models of startups innovative. In the framework of Morris et al (2005) the distinguishing feature of startup business model would be the aim for rapid growth. This feature will be treated later in this paragraph. The innovative nature of startup business models can probably be found in the way they combine existing concepts in a novel way. Schumpeter indeed defined innovation as the combination of existing resources in creative ways (Schumpeter, 2000).

Uncertainty

"*A startup is a human institution designed to create a new product or service under conditions of extreme uncertainty*" (Ries, 2011: 24). The uncertainty of beginning companies is not a new insight, this has for instance been captured in the liability of adolescence concept (Bruderl & Schussler, 1990). The latter stresses that companies which are a short time in operation suffer from the most risk of mortality. The first months of the company the chances of termination are not as high, because the

starting entrepreneur(s) start out with optimism and generally a sum of capital. Over eleven thousand euro for the more ambitious team startups in the Netherlands (Stam & Schutjens, 2005).

Garnsey (1998) also built a framework around the beginning years of a company. In the growth model of the author, a company starts in the early prospecting phase (Garnsey, 1998). In this phase it is essential for the company to acquire knowledge about the market: the competition and supply conditions (Garnsey, 1998). On the basis of this information a beginning company can construct a viable business plan. The second stage, of resource mobilization (Garnsey, 1998) is a testing stage; investors base their investment decision on the presented business plans (Rea, 1985). Furthermore, a company experiences whether there is sufficient demand for its product or service. The validation of the company by the market influences the development trajectory of the company. For a beginning company it is however uncertain whether its trajectory will lead to growth, a steady state or closure (Garnsey, 1998).

Contemporary authors emphasize that customer acquisition is the most important challenge for startups (Blank, 2011; Ries, 2012). The ideas of the authors can best be explained using the Marmer stages (see figure 1). The discovery stage is similar to the early prospecting phase in the growth stage model of Garnsey (1998). A company has to find, in terms of Blank (2011), a problem-solution fit. The product or service of the startups should be the solution for a problem many potential customers face (customers within and outside the country; Lalic et al, 2013). As soon as a solution is found it can be translated into a small scale (prototype) business, a so-called minimum viable product (MVP), which gets tested in the validation phase (Marmer et al, 2012b). It is hard for a company to alter its trajectory when it has invested a lot of resources. The authors Blank (2011) and Ries (2011) argue therefore that a startup should remain small and flexible in the initial stages. However, as soon as a product-market fit (a repeatable sales model) is established and uncertainty is reduced, the startup should focus on scaling their business (Blank, 2011). The tendency to grow fast will be covered in the following.

Figure 1: Marmer stages by the average worked months and average raised funding (Marmer et al, 2012b).
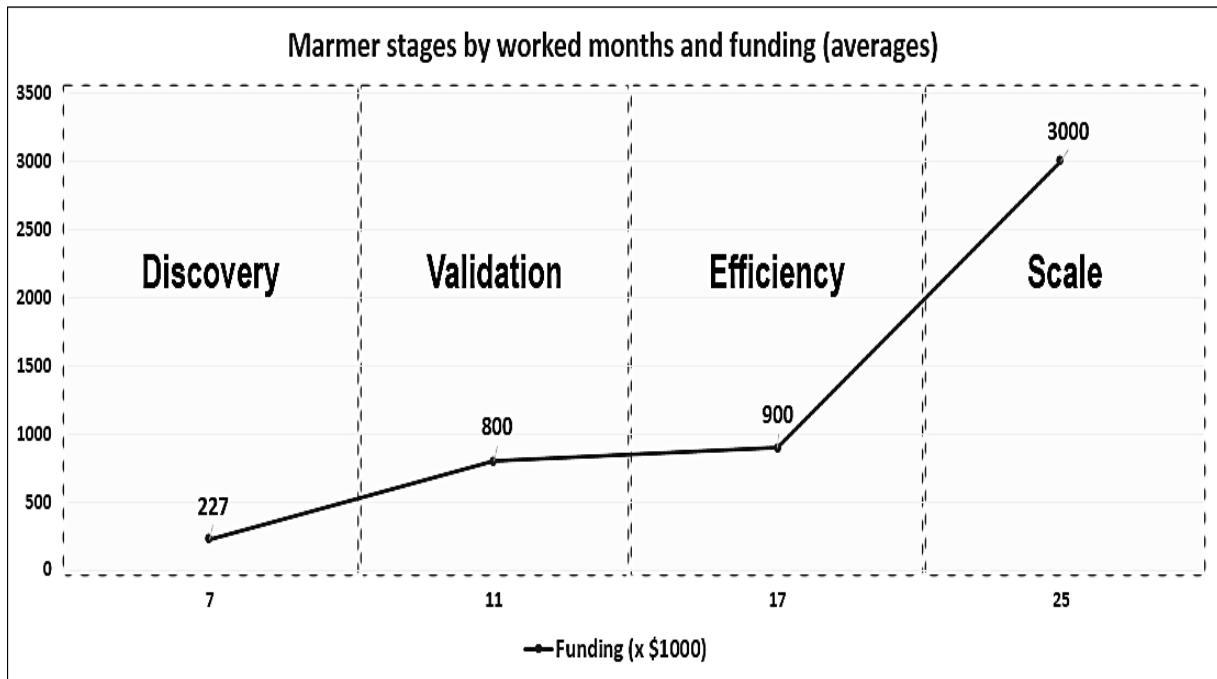
Growth design

Many studies on startups focus on growth (Kazanjian & Drazin, 1990; Davidsson & Henrekson, 2002; Koski & Pajarinen, 2012), because startups are considered to grow in an unparalleled way. The growth stage model of Garnsey (figure 2; 1998) is still useful in understanding the presumably rapid growth of startups. Garnsey recognizes an important juncture in the third stage, in which companies start generating profits. Many companies settle for stability when this stage is reached, visualised in the horizontal growth trajectory, Companies that aim for rapid growth, i.e. startups, have to extend or shift their product range to achieve a continuing growth trajectory as in figure 2 (Garnsey, 1998). According to Garnsey this requires a significant amount of funding. Garnsey (1998) mentions 'unusual' cases of companies that quickly reach the third stage. This early success is self-reinforcing. In other words, these companies have proven to be creditworthy and therefore are able to attract capital for further growth (Garnsey, 1998). The growth is also achievable without external resources, however at a slower pace. This principle helps explaining why startups require external capital.

Figure 2: The growth stages model of Garnsey (1998).

Assets
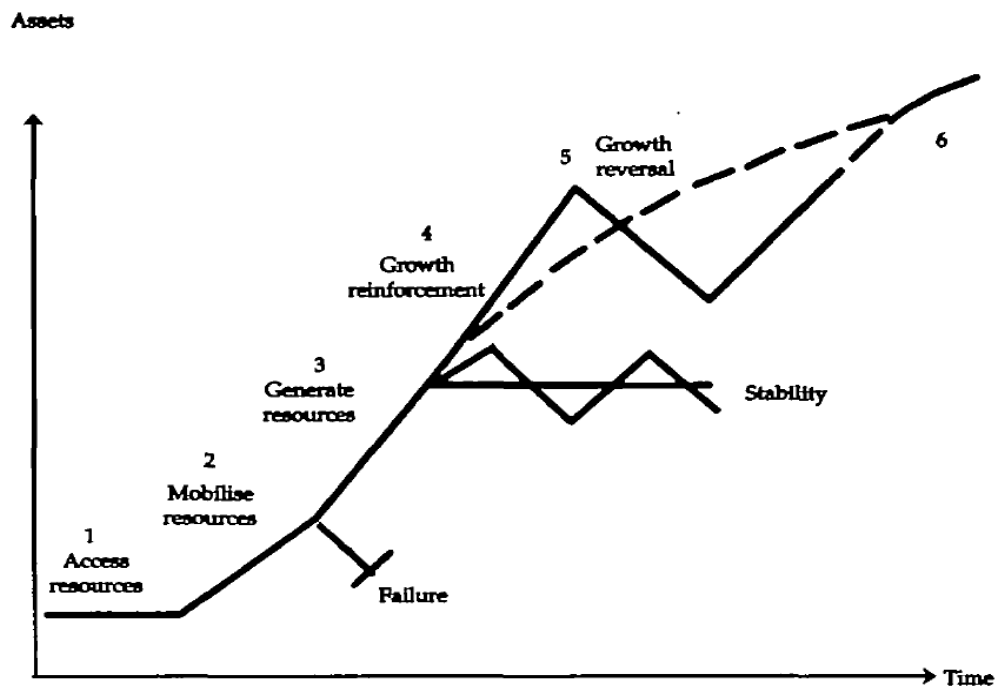
The last Marmer stage is the scaling stage, in which the startup executes its scalable business model to reach its desired (large) scale (Marmer et al, 2012b). A startup in this stage has on average raised three million euro in funding (see figure 1). There are multiple studies that show that venture capital has a positive effect on the growth of startups (Davila, 2003; Puri & Zarutskie, 2012; Rosenbusch, 2013). Davila (2003) also supports the claim of Garnsey (1998) that a lack of funding can hamper the growth trajectory of a firm. An injection of venture capital does not only lead to employment growth, it also has a positive effect on company sales (Helmann & Puri, 2000; Puri & Zarutskie, 2012). Smolarski and Kut (2009) show that a single round of funding with multiple investors can even stimulate international growth. Tanev (2012) acknowledges that the scaling of technology firms forces them to tap into international markets. Furthermore, the firms are likely to have international customers and competitors (Tanev, 2012). The next paragraph will cover the dynamics of internationalization, but firstly the literature on startups will be reviewed.

Critique

Studies on startups are generally biased. Scholars generally show interest in startups because they perform different than other companies. The studies are however often skewed towards successful cases. By doing this, many startups that are less successful and maybe have other characteristics are

not included. A classic example is survivorship bias, studying a cohort of firms that all survived over a certain timespan (Cassar, 2004).

Furthermore, scholars have experienced difficulties defining startups (Bruton & Rubanik, 2002; Gans et al, 2007). As a result, scholars often choose limited samples of companies that in any case satisfy the conditions for being a startup. For example analysing only companies that are part of a startup incubator (Stuart & Abetti, 1987; Conti et al, 2003). By doing so, the authors ignore that startups in these programmes differ from other startups. This in turn makes the results less generalizable. Another practice is choosing the research units retrospectively. For example choosing only startups that received venture capital (Chang, 2004; Mann & Sager, 2007). Often biotech startups are chosen as well, because the biotech sector is more clearly defined than other 'startup industries' and the companies are by definition highly technological (Stuart & Sorenson, 2003; Baum et al, 2004). The bias in the studies is not essentially wrong, but it is important to note the consequences of excluding certain companies.

Contemporary authors like Blank (2011) and Ries (2011) define startups on the basis of a methodology for developing a business. The authors provide valuable insights into how many contemporary startups approach their business. However, it is a fallacy to regard only the companies that abide their methodology as startups. Marmer et al (2012) have made a good effort in incorporating the principles in a comprehensive framework. The framework nonetheless shows a lot of similarities with the almost decades old model of Garnsey (1998). The main remark is that startups and their developments are not as novel as sometimes portrayed, existing frameworks still prove to be helpful in understanding them.

2.1.2 Internationalization

The literature on the internationalization of companies goes way back. However, the process of internationalization changed and the literature evolved with it. Around the change of the millennium there was an abundance of reports worldwide on cases of rapidly internationalizing small and young firms, called Born Globals (Madsen & Servais, 1997; Knight & Cavusgil, 2004). Although the characteristics of Born Global companies show similarities with those of startups, it will be argued that the Born Global framework is not suited for this study.

Born Globals

The Born Global phenomenon was initially observed by young technology companies, the term 'High Technology Start-ups' was therefore also used (Madsen & Servais, 1997). Born Globals, like startups, have limited resources, differentiated products and leverage ICT (Tanev, 2012). The distinguishing feature of Born Globals is, however, that they manage to be active on international markets within a limited timespan (Knight & Cavusgil, 2004). In the stricter definitions, the activity should be reached within two years, be in global markets and amount for at least half of the company's revenue (Dib et al, 2010). Gabrielsson et al (2004) visualize the manner in which Born Globals fundamentally differ from other internationalizing companies (see figure 3). The distinguishing feature of Born Globals is that the companies do not internationalize in a conventional step-by-step manner.

Figure 3: Conceptualization Born International and Born Global phenomenon compared with traditional stepwise internationalization models (crooked line; Gabrielsson et al, 2004).

A key tenet of the previous paragraph on startups was that the development of startups proceeds conventionally through stages. Furthermore, Marmer et al (2012) argue that startups which do not behave in accordance with the stage model perform worse. Additionally, studies have not yet proven that Born Globals are more successful companies (Tanev, 2012). The Born Global framework would most likely only be applicable to a limited amount of cases in the study, since actual Born Globals are rare (Gabrielsson et al, 2004). Moreover, Johanson and Vahlne (2009) claim that their renewed step-by-step model of internationalization manages to capture the rapid internationalization of contemporary firms. Before turning to the renewed Uppsala internationalization model, the original model will be treated to comprehend the traditional understanding of internationalization.

Traditional internationalization models

The original Uppsala internationalization model (U-M) describes an incremental learning process. A process, because international activities are constantly shifting. In the old U-M there are two agents of change; commitment decisions and current activities (see figure 5). Commitment is defined as sizeable investments with a considerable inflexibility. The decisions are to an extent irreversible and therefore have to be well informed. The model therefore emphasizes market knowledge, experiential knowledge a company gathers over time (Johanson & Vahlne, 2009). New activities that arise from a commitment decision, for instance the opening of an office abroad, lead to new insights. These insights in turn influence future commitment decisions. The central notion of the old framework is that companies approach internationalization cautiously. Captured in the concepts psychic distance and liability of foreignness. Psychic distance refers to the barriers companies perceive in unfamiliar environments (Johanson & Vahlne, 2009). The liability of foreignness is the competitive disadvantage companies have compared with companies that operate in their local environment (Zaheer, 1995).

Figure 4: The Uppsala Internationalization Model conceptualized, original and revised (Johanson & Vahlne, 2009).
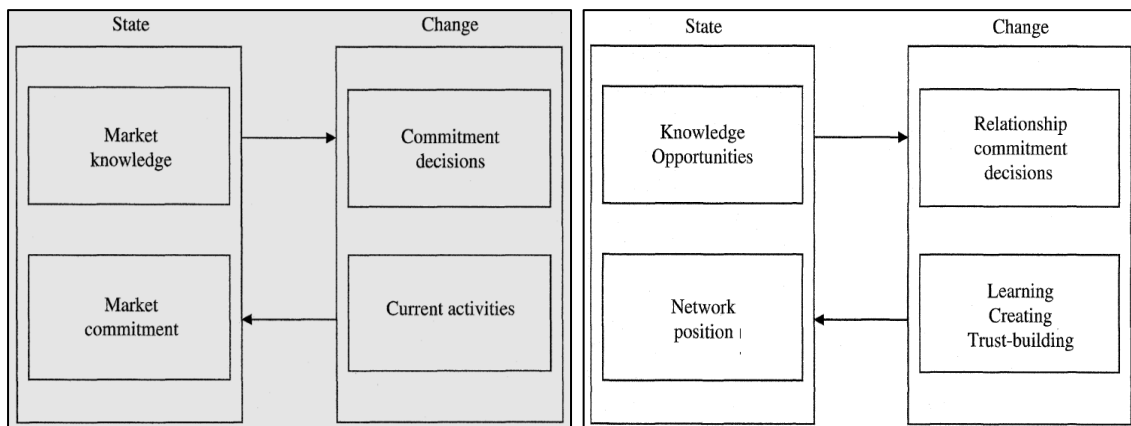
The advocates of the Born Global framework argue that the latter concepts are outdated due to processes of globalization. Globalization led to decreasing transportation costs, more accessible information about foreign markets and more homogenized consumer preferences internationally (Madsen & Servais, 1997; Knight & Cavusgil, 2004). All have reduced the liability of foreignness and decreased the psychic distance that companies experience. Other factors that are responsible for the distinct internationalization of Born Globals are the prior international experience of the entrepreneur, differentiated (technological) products and international partnerships (Cannone & Ughetto, 2014). Furthermore, the phenomenon is more common among companies with a limited domestic market.

Revised Uppsala internationalization model

Johanson and Vahlne (2009) revised their model (figure 4) in response to the aforementioned developments and advancements in literature. Although the authors acknowledged the critiques, they argue that the model still holds true. Firstly they state that the phenomenon of a Born Global company is misrepresented. Most of the companies labelled as Born Globals are not active on global markets and therefore do not differ considerably from the companies described by the U-M (also Gabrielsson et al, 2014). Furthermore Born Globals do not start out from scratch; the entrepreneurs often have already established connections with actors in international markets (Johanson & Vahlne, 2009). The core argument of the authors is however that, even though the pace has increased and psychic distance has decreased, the underlying dynamics of internationalization essentially have not changed.

At the heart of the revised Uppsala internationalization model is still the process of (experiential) learning that leads to decision making Johanson & Vahlne, 2009). The fundamentals of the U-M nonetheless changed from a neoclassical market view to a network based view. How and where a company enters international markets is determined by existing relationships of a company. Together with the ability to establish a position in international networks (Johanson & Vahlne, 2009). A company is more likely to expand into markets in which it already has connections. The connections and their market knowledge offer 'exclusive' opportunities for internationalization (see figure 4). Looking forward to the next paragraph on funding, attracting investors with a global network could encourage the internationalization of startups.

2.2 Funding

In the previous paragraphs it became apparent that (external) resources are important for the development of a company. Startups have limited resources and considerable uncertainty about their future, this makes that a bank loan does not fit their requirements. Banks are generally not willing to take on the risk, while startups refrain from the looming debt (Gabrielsson et al, 2004). Venture capital (VC) investors have manifested themselves as the solution for young capital hungry companies (Gompers & Lerner, 2001). Startup funding is however broader than venture capital alone. This chapter focusses on the different types of startup funding and the factors that influence the funding startups receive.

2.2.1 VC investors and alternatives

The type of investments of venture capitalists differ considerably form bank loans. In the case of venture capital, money is being handed to a second party without collateral. A bank lends money providing that the receiving party has collateral, like a wage, revenue stream or a property. The VC investor instead requires private equity of the company they invest in. Private equity is a share of a company that is not listed on the stock market. In result, the VC investor thus owns a percentage of the receiving company in order to get a return on investment (Wright & Robbie, 1990; Gompers & Lerner, 2001). The investors distinguish themselves by investing in companies with high potential and by staying actively involved in the company (Hellmann & Puri, 2000; Jeng & Wells, 2000)

VC firms generally comprise of "*full-time professional investors*" (Hellman & Puri, 2000; 963) investing their shared (partnership) funds. The venture capitalists seek investments with high rewards; they therefore get drawn to young companies with growth intentions in rapidly changing markets. The investors often suffer from information asymmetries. They have to determine the value of companies on the basis of limited provided information (Wright & Robbie, 1990). The venture capitalists therefore need to be informed about the latest technological and market developments. Not only for determining value of the investment, but also in order to recognize potential companies for their portfolio (Hellman & Puri, 2000).

The VC investor keeps actively involved with the invested-in company in multiple ways (Jeng & Wells, 2000). The VC investor is generally experienced and can help through mentoring and strategic advice, sometimes by taking a (high) position in the company. Multiple studies find that VC investors

get actively involved with human resource management, for example hiring a head of marketing and sales or even a new head of the company (Kaplan & Strömberg, 2000; Hellman & Puri, 2002). Young fast growing companies sooner or later need to acquire subsequent funding. VC investors have also been known to assist in this process for their companies (Dean & Giglierano, 1990). Lastly, the investors can influence the decision of the company to go public, a so-called initial public offering (IPO; Hellman & Puri, 2000).

Alternative investors

Jeng and Wells (2000: 247) state that "*venture capitalists are the only ones who can really successfully provide the type of corporate governance that startups need*". They emphasise the active involvement needed in the company, this makes for instance pension funds, insurance companies and banks unsuitable as investors. Commercial banks rarely invest in young companies, when they do it is only through subsidiaries (Hellman & Puri, 2000). Investment banks in unique cases step in at a later development stage of the company, thereby aiming for an IPO. Corporations sometimes also invest in young companies; ad hoc or via a VC fund. Other capital alternatives are self-financing, money from the founders, friends and family (FFF), or government grants (Hellman & Puri, 2000). The latter types however rarely provide sufficient funds for a company.

VC firms are not the only private equity investors, other types are angel investors and private equity firms. Angel investors are individuals that invest their own capital (Rosenbusch et al, 2013). Although they do not have their own staff, they do tend to use their network to oversee (potential) companies and sometimes invest as a group. Many are experienced entrepreneurs that still are in a management position (Hellman & Puri, 2000; Rosenbusch et al, 2013). The investors generally choose companies in first development stage(s) and are less profit driven as the VC investor that is part of an overarching fund. The private equity (PE) firms (McLaughlin & Lydecker, 2014), or leveraged buyout (LBO) firms (Rosenbusch et al, 2013), are another type of private equity investor. Basically these firms take private equity as well as collateral; the cash flow of the company. The PE/LBO firm thus takes less risk than the VC firm (demanding collateral) and it invests in later stage companies (hence the required cash flow). Furthermore, this type of investors takes a less active role in the business proceedings of the receiving company (Rosenbusch et al, 2013).

Most of the literature on the aforementioned funding types is from the beginning of the 21st century, as those types have not significantly changed over time. However a new way of funding for young companies has emerged in recent years; crowdfunding. Defined by Schweinbacher and Larralde (2010: 3) as *"an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes"*. Crowdfunding is increasingly used for the funding of companies. Crowdfunding with private equity in exchange is, however, still scarce due to regulatory constraints (Mollick, 2014). All in all, crowdfunding could provide a suitable funding alternative for company in its initial development (Schweinbacher & Larralde, 2010; Ley & Weaven, 2011). Parallel to the development stages are the investments stages. They can help to better understand the types of funding startups attract throughout their existence and will thus be treated in the following subparagraph.

2.2.2 Stages of funding

In the paragraph on startups, attention was put on the development stages of a company. The funding of companies also occurs in stages, which run parallel to the development of the firm (Cassar, 2004; Ley & Weaven, 2011). However, different authors distinguish different funding stages (see figure 5). Three stage models of financing are treated in this paragraph. It will show however that they are in essence the same.

Dean and Giglierano (1990) in the nineties already acknowledged the importance of funding for startups. In the fast changing markets of startups, it can be vital to receive funding and develop a (new) product. The authors a stage model to show that VC firms aim for their portfolio companies to receive subsequent funding. To make sure that the companies stay vital and also to ensure further growth (Dean & Giglierano, 1990). A related phenomenon is syndication among VC firms. VC firms increasingly invest in tandem to spread risk, but also to guarantee more informed investment decisions (Sorenson & Stuart, 2001). Returning to the stage sequence, Dean and Giglierano (1990) recognize five stages/rounds. The first being the 'founders round', corresponding with the first stage of Garnsey (1998) where founders finance the start of their company. This stage is not attractive for VC firms, as there are too much uncertainties concerned. The sample of Dean and Giglierano (1990) with Silicon Valley VC firms shows indeed that those firms prefer the seed round and the 'second stage'. In

these stages, a business becomes more concrete and subsequently will enter the market and grow. In the penultimate round, investments are aimed at preparing a company for going public.

Figure 5: Stages of funding recognized by different authors.

Dean & Giglierano (1990)	Shachmurove (2001)	Gabrielsson et al (2004)
• **Founders round** *- planning and product development* *- capital from founders* • **Seed round** *- develop product and business* • **Second stage** *- launch and growth* • **Mezzanine stage** *- continue and prepare for IPO* • **Public company**	• **Early stage financing** - <u>Seed</u>*: to prove concept, qualify for start-up capital* - <u>Start-up</u>: *to complete product development and initial marketing* - <u>First stage</u>: *to initiate full-scale manufacturing and sales* • **Expansion financing** - <u>Second stage</u>: *for initial expansion* - <u>Third/mezzanine stage</u>: *for major expansion* - <u>Bridge</u>: *to prepare for IPO* • **Acquisition/buyout financing** - <u>Acquisition</u>: *to finance acquisition* - <u>LBO</u>: *to acquire a product line or business*	• **Establishment phase / Start-up capital** - Founders capital - Angels - Seed Money • **International phase / Commercialization capital** - Domestic/international public/private VC • **Global phase / Worldwide expansion capital** - Global partner resources - Global VC resources - IPO

Shachmurove (2001) also recognizes different stages of funding. The author puts emphasis on the purpose of the funding for the company (see figure 5). The author recognizes three types of early stage financing. First of all seed financing, the first moment of validation in the development trajectory of a company. A seed accelerator programme can be used at this point. Accelerators run programmes in which a group of startups is selected, subsequently the startups are provided with (equity-based) capital and expertise, to finally propel the startups to the next phase of development and financing (Cohen & Hochberg, 2014). A similar phenomenon is an incubator, which provides working space and the occasional mentoring. However, incubators generally do not work in strict programmes (Cohen & Hochberg, 2014). The funding that follows seed is 'start-up financing', used to launch a product on the market. 'First stage financing' is utilized to ramp up the sales of the product (Shachmurove, 2001). Subsequent stages are for expansion, going public and acquisition of other companies. The framework is useful because it distinguishes particular types of funding and at the same time provides useful overarching categories.

Gabrielsson et al (2004) also use three overarching categories, which are in line with development stages of a rapidly internationalizing company. The company progresses from the establishment phase to the international and global phase. Figure 5 also shows that authors use the same terms for

different phenomena, which leads to confusion. Gabrielsson et al (2004) for example talk about start-up capital when addressing founders' capital, angels and seed money, while Shachmurove (2001) has a different, narrow definition for start-up financing. The framework of Gabrielsson et al (2004) implies that companies utilize international investors to enter international markets and the same with global investors and markets. Their study however shows that the latter is rare, which comes down to the geography of venture capital (Stuart & Sorenson, 2001; Gabrielsson et al, 2004). The next paragraph discusses the influence of geography and other contextual factors.

2.2.3 Contextual determinants of funding

The supply of venture capital is unevenly distributed across regions (Stam, 2009). Contextual characteristics determine the supply of venture capital within a region, specifically government policy and regulations and the initial public offering (IPO) market. Furthermore, funding stays within certain geographical boundaries.

The role of the government is two-sided. Governments are responsible for regulations which can hamper entrepreneurial activities (Davidsson & Henrekson, 2002). On the other hand they can implement policies which stimulate entrepreneurial and financial activities (Jeng & Wells, 2000). Davidsson and Henrekson (2002) show that negligence of Swedish policy-makers led to a declining rate of starting companies. Together with limited employment contribution of the fastest growing cohort of firms. Jeng and Wells (2000) draw a distinction between determinants of early stage and later stage investment activity. They find that labour market regulations negatively affect early stage investments. Initial public offerings mainly effect later stage investments (Jeng & Wells, 2000). Late stage investors often aim for the invested-in company to go public, when there is no (stock) market demand these investments get discouraged (Gompers & Lerner, 2001). IPOs initiate upward trends in cycles of investment, during these periods venture backed 'former startups' reach higher valuations when going public (Jeng & Wells, 2000; Nanda & Rhodes-Kropf, 2013).

One could argue that with the modern day communication methods and ease of transportation companies can tap into worldwide financial resources. However, venture capitalists also monitor and stay involved in the young companies in which they invest. This requires face-to-face contact between both parties, which cannot be entirely substituted by digital (tele)communications (Stam, 2009). *"Inherent boundaries around the flow of timely, reliable, and high-quality information produce localized*

patterns of exchange" (Stuart & Sorenson, 2001: 1584). If there is no bridge between these bounded networks young companies will not have access to venture capitalists and vice versa. Jeng and Wells (2000) simply state that the cost and effort involved with monitoring and even selling of distant companies discourages venture capitalists.

Stuart and Sorenson (2001) studied the effects of distance on an investment decision of a VC firm. The authors found that the likelihood of a VC firm to invest in a company decreases when the distance between them increases. Investments are however more likely to occur when the receiver is a later stage company, rather than one in seed or startup stage. Furthermore, venture capitalists that are more experienced are more inclined to make a distant investment (Stuart & Sorenson, 2001). A venture capitalist is also more likely to invest in a distant company when another VC investor in their network (syndicate) has already invested in it. The effects of syndication are even that a VC firm would be more likely to invest in a distant company when it is close to a syndicate partner (Stuart & Sorenson, 2001). This suggests that accessing networks of investors is beneficial for startups. The next paragraph will focus on factors at the firm level that influence attracting funding.

2.2.4 Firm determinants of funding

In this study, the goal is to find which startups manage to attract (more) funding and why. There is much literature that focusses on VC investors, most of the information on factors that influence startup funding also originate from such studies (Hellmann & Puri, 2000; Kaplan & Strömberg, 2000; Cassar, 2004). However, there have been studies that show different factors per stage (Rea, 1985; Haar et al, 1998) and more recent studies that show differences between investors (Madill et al, 2005; Nofsinger & Wang, 2011). This paragraph will treat several main factors; market, product, business model, management and proven record. During the examination of the factors, differences according to stage and investor are mentioned.

Market

A startup generally has an uncertain future, which is a risk for investors. However, the investor can assess the startup according to the market they (aim to) operate in. An often reported requirement of a VC investor is that the market of the startup allows for rapid growth (Rea, 1985; Kaplan & Strömberg, 2000; Vinig & De Haan, 2003). The investors require the growth of the firm to get a better return on investment. Investors are also, but less explicitly, attracted to startups that potentially create

new markets or change existing ones (Kaplan & Strömberg, 2000; Vinig & De Haan, 2003). The market opportunities influence all types of investments. However, they are more determining in early stage investments because startups not yet have a proven record in that stage. Vinig and De Haan (2003) show that investors in the Netherlands show special interest in startup in markets in which they are familiarized. In other words, investors target companies in specific industries.

Multiple studies show different chances of attracting funding in different industries. Hellman and Puri (2000) discover that companies in the telecom and medical industry have more chance to attract funding, while this is less likely for companies in the computer industry. Chang (2004) recognized two categories of internet startups; e-commerce companies and internet platforms. The market for e-commerce companies proved to be more mature than the investment market for internet platforms. The study of Puri and Zarutskie (2012) showed that mainly companies in capital intensive industries, like electronics and biotech, are more likely to attract venture capital. Capital is indeed more abundant in the biotech industry; the companies in the sector are mainly targeted for their technology and product (Baum & Silverman, 2004; Haüssler, 2009).

Product

The product of a company is important for investors, the emphasis however differs per investment stage. In the early stage, the product is still in development, so investors assess it on grounds of its innovativeness, market potential and proprietary character (Kaplan & Strömberg, 2000; Vinig & De Haan, 2003).

The product of the company should be differentiated and reach wide markets. Both characteristics refer to the nature of startups and the globalized markets in which they operate. Vinig and De Haan (2003) show that VC investors indeed screen the companies on the basis of the global potential of their product. Other authors emphasize that investors choose companies that employ new technologies and products (Kaplan & Strömbger, 2000; Nofsinger & Wang, 2011). Hellmann and Puri (2000) distinguished 'innovator startups' that introduced a new or significantly better product and otherwise develop technology that can lead to the aforementioned. The results show that the innovator companies are more likely to receive funding (Hellmann & Puri, 2000).

Many studies have studies the effect of patents on investments (Mann & Sager, 2007; Häussler, 2009; Feldman, 2014). The findings are divergent, for example investors in the US value patents

more than investors in the Netherlands (Vinig & De Haan, 2003). The differences between industries are more apparent. In the biotech industry investors show a lot of interest in patents, while this is much less the case in the software industry (Mann & Sager, 2007). Feldman (2014) furthermore shows that patents are more a signal to investors than an actual determinant for investment.

Business model

Kaplan and Strömberg (2000) find that VC investors show special interest in the business models of companies. Kaplan and Sawhney (1999) found that business-to-business startups receive special interest of investors. Kshetri and Dholakia (2002) correspondingly find that in regions with plenty supply of venture capital (see previous paragraph), B2B companies are favoured among investors. Two aspects of the startup business model treated in the previous paragraph were found in the literature on financing as well. Investors showed to value business models that integrate new concepts and 'lean operations' (Strömberg & Kaplan, 2000). The evidence on the latter is however circumstantial.

The customer adoption is a more concrete aspect that investors assess. Investors prefer companies that have large costumers, reflected in the studies on B2B startups. Furthermore, they prefer companies that have recurring group of customers (Strömberg & Kaplan, 2000). It must be noted that investors do not necessarily refrain from B2C startups. Investors do however assess B2C companies on other grounds. Specifically the way it aims to achieve consumer engagement and the 'proven' popularity among their target group.

Management

Authors have long studied the role of entrepreneurs in receiving funding (Rea, 1985; Haar et al, 1989; Cassar, 2004; Gartner et al, 2012). Although all studies agree that the entrepreneurs have a role, the empirics are inconclusive in determining what exactly makes the difference.

Nofsinger and Wang (2011) find that the experience of the entrepreneurs matters. Gartner et al (2012) show a positive influence of high education on financing. Cassar (2004) on the other hand does not find any effect of experience and education on funding. Vinig and De Haan (2003) show that the entrepreneurs are in particular assessed on their leadership qualities. However, replacing the higher management of the invested-in company is wide practice (Hellmann & Puri, 2002; Madill et al, 2005). This suggests that the leadership qualities of the entrepreneur are not decisive. An older study

of Rea (1985) showed that is the credibility of (the future projections by) the entrepreneur which is critical. Although the studies disagree on different points, they all to an extent argue that the network of the entrepreneur is determining (for example Kaplan & Strömberg, 2000; Madill et al, 2005).

Proven record

The essential difference between early stage and later stage investments is that the investors in the later stage have more information on the prospective investment. The most important criterion for venture capitalists in later stages becomes the actual performance of the company up until that time (Dean & Giglierano, 1990; Kaplan & Strömberg, 2000; Vinig & De Haan, 2003). This also comes back to the first three factors, there could be growing demand in the market, the product could have proven itself, or the engagement of the costumers could have showed to work. The most important aspect that will be treated here is successive funding.

A startup can be validated by the market via the demand for its product or service, but it can also be accredited by investors. The prominent study of Madill et al (2015) found that startups that received investment of an angel are more likely to receive subsequent venture capital. The angel investors leverage their network and expertise to support the business of the startups (Madill et al, 2005). It shows that the involvement is also partly aimed to prepare the startup for follow-up investments. The same applies to accelerators, which programmes often lead into funding rounds (Cohen & Hochberg, 2014). Furthermore, being part of an accelerator can also been seen as a quality stamp as the startups have been subject to a selection process. Lastly, VC investments increasingly happen in succession (Dean & Giglierano, 1990; Stuart & Sorenson, 2001; Brander et al, 2002). Firstly, VC investors try to ensure their return on investment by stimulating follow-up investments (Dean & Giglierano, 1990). Furthermore, the syndication of VC investors has become a wide spread phenomenon (Lockett & Wright, 2001; Brander et al, 2002). This phenomenon not only led to multiple investors involved in funding rounds, but also to more successive funding. Looking at geography, syndication has even made international capital more accessible (Stuart & Sorenson, 2001; Liu & Maula, 2015).

2.3 Conceptual framework

The literature treated in this chapter has a multidisciplinary character, with grounds in entrepreneurship, business, finance and geography. The studies have helped understanding the phenomena startups and startup funding. This paragraph reviews the literature in order to construct hypothesis that will be tested in the subsequent analyses. The analyses will then help answering the before formulated research question:

To what extent do contextual and firm characteristics determine the funding startups in Amsterdam and Stockholm attract?

2.3.1 Startups

This study defines a startup as: *a maximum-five-year-old company that earns revenue through a service or products that offered online and, if not, are technology related.*

The definition accounts for all the aspects covered in the first paragraph of this chapter. A limited *timespan* is chosen; the definition fits well within the OECD-based definition of Koski and Pajarinen (2012) and the empirically based definition of Marmer et al (2012). Furthermore, in these early years the companies still suffer from *uncertainties* such as liabilities of adolescence (Bruderl & Schussler, 1990). All the startups leverage ICT, the *technology* facilitates standardization of the product or service. As a result the startup can potentially *grow* and reach *international* customers (Lalic et al, 2012; Tanev, 2012).

Internationalization

The products and services of startups are increasingly suited for an international customer base. Together with the wide reach through online channels this makes that startups are arguably international by definition. However, the U-M argues that internationalization is conditioned by commitment decisions (Johanson & Vahlne, 2009) and Born Global literature states that the international activities have to account for a substantial part of the companies' revenue (Dib et al, 2010). Taking both in account, internationalization will be determined by having an office abroad. Startups that have an office abroad are by definition internationalized.

The first expectation is that internationalized startups receive more funding. For investors it is an indication that there is a plenty demand for the product or service from the company. Otherwise the startup would expectedly not venture abroad. Because internationalization is seen as a validation of

the business, it is also expected that startup is more likely to have funding than non-internationalized startups. Hence, the below hypothesis.

H11: Startups that have an office abroad are more likely to have funding and a higher amount of funding.

In the later analyses, the relationship will be tested in reverse. Two hypotheses (below) will be tested for this purpose, the numbering shows that the analyses will feature last in the study. The opposite relationship assumes that the capital required for opening an office abroad is attracted from investors. Two additional assumptions are made; opening up an office requires substantial external capital and internationalization occurs in a later development stage. Both are incorporated in the first hypothesis, stating that the relationship with internationalization is stronger when the startup is in a later investment stage. The other hypothesis is concerned with the location of the investor. There is expected to be a positive relationship between attracting a foreign investor and having an office abroad. The network of the foreign investor is assumed to give opportunities for startups to enter foreign markets. This connection is expected to be stronger among startups that have attracted an investor outside Europe.

H17: Having attracted funding has a positive relationship with having an office abroad. This relationship is expected to be stronger when the startup is in a later investment stage.

H18: Having attracted a foreign investor has a positive relationship with having an office abroad. This relationship is expected to be stronger when the investor is from outside Europe.

Born Global literature has been critiqued in this chapter. It was argued that the principles of the U-M are still suitable for explaining internationalization. The U-M shows that internationalization is a sequential process. The way Born Globals internationalize is supposedly incomprehensible with a stepwise model. Born Global literature does not consider internationalization in parallel with the development of company. The development of a company, which is inherently sequential, is in this study represented by the investment stage. In this study a positive relationship is expected between the investment stage and having a global office (outside Europe). The revised U-M emphasizes the importance of the network position of a company, in this study indicated by reaching investors abroad. Attracting a foreign investor is considered as a step within the internationalization process. The expectation is thus that there is a positive relationship between having attracted foreign investors and having a 'global office'.

H19: Having attracted funding has a positive relationship with having an office outside Europe. This relationship is expected to be stronger when the startup is in a later investment stage.

H20: Having attracted a foreign investor has a positive relationship with having an office outside Europe. This relationship is expected to be stronger when the investor is from outside Europe.

2.3.2 Funding

The types of funding that a startup receives can be distinguished by investment stage and investor. Based on the investment stages recognized in figure 5, this study distinguishes four funding stages; seed, early, expansion and acquisition. Some investors only make seed investments and seed is therefore considered as a separate stage. The startups that have attracted funding will be classified in investment stages. Based on the scope of the attracted investors and on the amount of funding they received (see 3.3 for more).

Information on the investors has been distracted from external resources. There are certain types of investors that receive special interest. Firstly accelerators, angels, crowdfunding institutions and incubators, because these are considered to on them self only do seed investments (Haar et al, 1989; Schweinbacher & Larralde, 2010; Cohen & Hochberg, 2014). These types thus signal a certain investment stage. Other types receive special interest because they signal certain involvement in the startup; accelerators, angel investors and venture capitalists. They help developing the businesses and importantly can help attracting additional funding (see 2.2.4). Because capital for startups is considered to be unequally distributed geographically, foreign investors receive special attention. Their locations will be mapped and the effect on the amount of funding of startups will be analysed.

Contextual determinants of funding

The literature mentioned many factors that can influence the supply of capital in a region. In the next chapter, multiple figures on the context in both Amsterdam and Stockholm will be treated. In advance of these figures, a hypothesis will be constructed to test the expected results of being located in one of the two cities. The figures on both cities can be used to recognize the most decisive features. The information presented at this point states that Amsterdam experiences a lack of funding and that twice as much venture capital circulates in Sweden as in the Netherlands. Leading to the expectation that startups in Stockholm have more chance to receive funding, as well as higher amounts of funding.

H1: Startups in Amsterdam are less likely to have funding and a higher amount of funding.

The literature states that the availability of capital for startups is dependent on the institutional environment as well as on characteristics of the capital market. The availability of funding can be traced back to the institutional environment and capital market conditions. Previous studies have been mostly limited to venture capital investors. This study will also analyse the supply of other investors to get a broader view of the context in both cities. The analyses will also show the location of the investors attracted by startups in both cities. Thereby demonstrating whether the availability is indeed as concentrated as portrayed in the literature. In addition it shows to what extent the startups achieve in connecting with outside centres of startup capital.

Firm determinants

The studies covered in the previous paragraph showed certain features which potentially determine which startups receive any funding and which receive much funding. Not all the characteristics can be tested due to the nature of the used data. The data does not allow for differentiating the startup on the basis of their product. The startups are homogenous in that they all offer either online and/or technology-based products and services. Differences in the management of the startups can also not be determined, apart from possible involvement of investors. However the data allows for testing effects of variables on the market (industry), business model features and the proven record. Before treating these factors and their expected effects, the characteristic age will be treated.

As explained later, the sample of startups in this study consists of startups with different founding years. Some of the startups in the analysis are therefore longer in existence than others. However, the expectation is that the time in existence does not determine the funding. Startups that have been longer in existence potentially have more time to find an investor. However, the assumption is that investors select startups rather than the other way around. Furthermore, older startups in theory had more time to progress in to later development and investment stages. This however refers to the accomplishments of the startup, which are not equivalent to the years in existence.

H2: The age of startups has no effect on having funding or a higher amount of funding.

Industry

The industries that were most present among the startups in both cities are included in the analysis; the analytics industry, FinTech industry and media / content industry.

The media and content industry is a long established industry, advances in ICT have however led to an upturn of digital advertising (Simon et al, 2012; McKinsey & Company. 2015), The media industry is globally the same size as the FinTech industry, with both a transaction size of around 1,6 billion dollar (McKinsey & Company, 2015; SparkLabs, 2016). However, the online media and content is only a small share of the total industry. Moreover, the size of the FinTech industry is expected to grow 65% (Spark Labs, 2016) and the media industry merely 5% (McKinsey & Company, 2015). FinTech refers to financial technology; the industry consists of businesses that use software to provide financial services (FinTech Weekly, 2016). The funding of FinTech companies has risen 215% in Europe between 2014 and 2015, with the Nordics and the Netherlands as important sources (Accenture, 2015). The analytics industry consists of businesses that employ Big Data and/or Business Intelligence. Big Data is the information processing of complex voluminous data collections (Gartner, 2016a). Business Intelligence (BI) is a collection of applications, tools and other means for applying data in company operations (Gartner, 2016b). The global Big Data analytics market has shown unparalleled growth, the market (measured in revenue) grew 260% from 7,6 billion dollar in 2011 to 27,4 in 2014 (Kelly, 2015). The growth is however projected to stabilize the coming years. This makes analytics startups in the sample of special interest, because they were in business during the period of the strongest growth.

H3: Startups in the analytics industry are more likely to have funding and a higher amount of funding.

H4: Startups in the FinTech industry are more likely to have funding and a higher amount of funding.

H5: Startups in the media industry are less likely to have funding and a higher amount of funding.

Target group(s)

Recent reports on startups highlight that many startups are B2B, meaning that they cater to other companies (ESM, 2015; Van Dijk et al, 2015). B2B startups prove to be more successful in growing revenue (Van Dijk et al, 2015) and in attracting funding (Kaplan & Sawhney, 2000; Kshetri & Dholakia, 2002). Marmer et al (2012) however argue that the business-consumer distinction is no longer valid. This study will distinguish the startups by target group, including a category of startups that target both business and consumers. The findings can help establish whether the distinguishing startups according to target group is still useful. The expectation is that B2B startups receive more funding, because they target high paying customers and the literature shows to an extent that B2B startups

are more successful. It could also be argued that startups which target both businesses as consumers potentially have a bigger market and are therefore more in appreciated among investors.

H6: Startups that target businesses are more likely to have funding and a higher amount of funding.

H7: Startups that target both businesses as consumer are more likely to have funding and a higher amount of funding.

Revenue model

The revenue model of a startup gives an indication of the customer engagement, which recent studies on startup highlight. The most common revenue models of the startups in the sample are included; subscription, commission and freemium.

The Integrator startup recognized by Marmer et al (2012a) has a subscription-based revenue model. The subscription-based type was seen to attract lower amounts of funding than the other startups (Marmer et al, 2012a). Commission-based revenue models are more likely to be found among Challenger startups (Marmer et al, 2012a). These startups operate on specialized markets and aim for large transactions. The Challenger startup proved to attract the most funding on average (Marmer et al, 2012a). Lastly the freemium revenue model; a novel approach in which customers are allowed to use the basic product/service for free and are only charged for additional features (Liu et al, 2012). The approach is for example applied by Skype and Spotify, both technology companies with origins in Sweden (Seufert, 2013). Both are by Marmer et al (2012a) classified as Social Transformer startups, which raise substantial amounts of funding (average around two million euro).

H8: Startups that have a commission-based revenue model are more likely to have funding and a higher amount of funding.

H9: Startups that have a freemium-based revenue model are more likely to have funding and a higher amount of funding.

H10: Startups that have a subscription-based revenue model are less likely to have funding and a higher amount of funding.

2.3.3 Conceptual model

The next chapter will feature all the empirical analyses. Basically there are two main analyses. The logistic regression, which determines the factors that influence whether a startup receives any funding. The linear regression, which determines the factors that influence the amount of funding startups receive (extra factors are included in the analysis, see figure 6). It will be analysed whether having been internationalised has an effect on funding. However, it can also be argued that funding makes it possible to internationalize. The relationship is therefore tested two-ways; an extra analysis is focused on finding connections between funding, investors and having an office abroad (see figure 6). The regression models include a variable on the city of the startups. The location alone does not tell much, for that reason additional analyses are made. Firstly, a preliminary analysis of the differences between the cities on the basis of external resources and sample data. Secondly, the regression equations will also be executed over samples split by city.

Figure 6: Conceptual model of the analyses (dotted line: included in linear regression; grey: part of bivariate analyses).
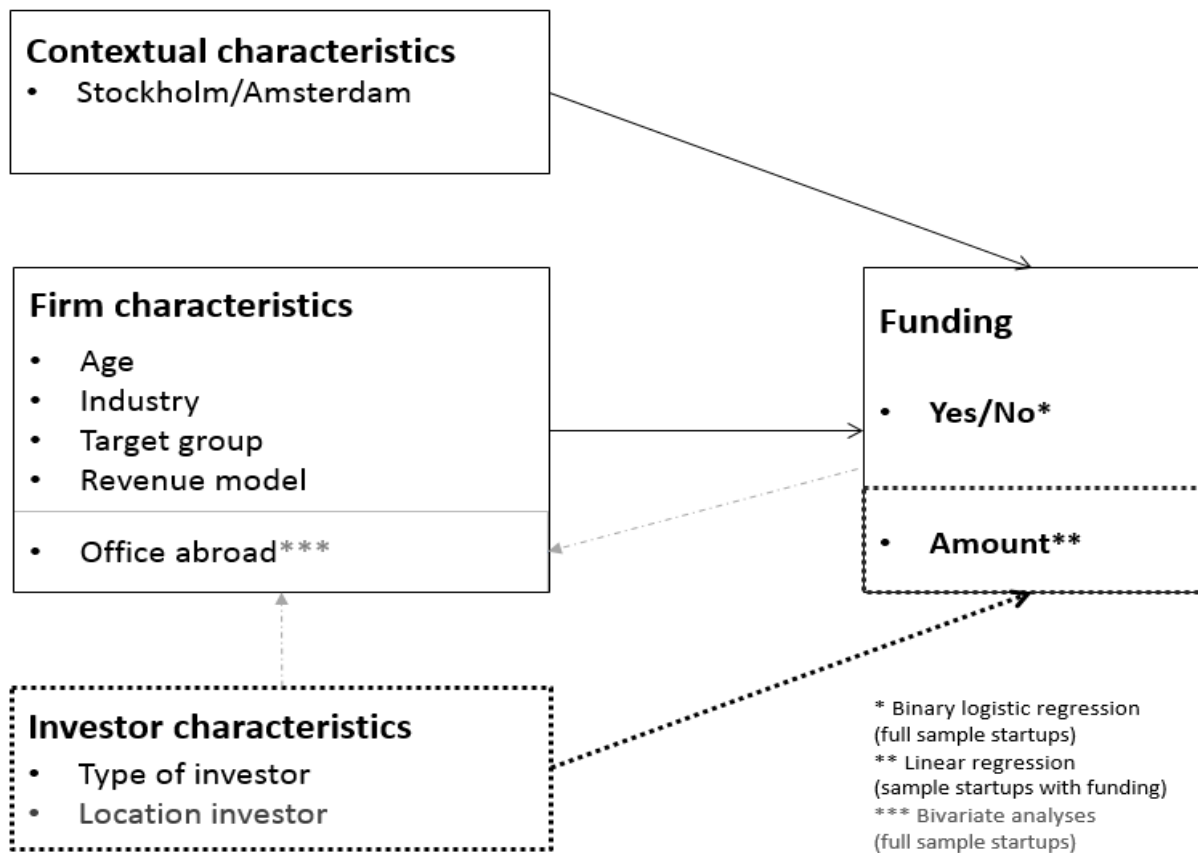
Hypotheses

The hypotheses that will be tested in the analyses of the next chapter were formulated in this paragraph. For a clear overview, the hypotheses are summarized below.

H1: The age of startups has *no effect* on having funding or a higher amount of funding.

H2: Startups in Amsterdam are *less likely to have* funding and a higher amount of funding.

H3: Startups in the analytics industry are *more likely* to have funding and a higher amount of funding.

H4: Startups in the FinTech industry are *more likely* to have funding and a higher amount of funding.

H5: Startups in the media industry are *less likely to have* funding and a higher amount of funding.

H6: Startups that target businesses are *more likely* to have funding and a higher amount of funding.

H7: Startups that target both businesses as consumer are *more likely* to have funding and a higher amount of funding.

H11: Startups that have an office abroad are *more likely* to have funding and a higher amount of funding.

H12: Startups that have been part of an accelerator are *more likely* to have a higher amount of funding.

H13: Startups that have attracted an angel investor are *more likely* to have a higher amount of funding.

H14: Startups that have attracted a VC investor are *more likely* to have a higher amount of funding.

H15: Startups that have attracted a non-domestic investor out of Europe are *more likely* to have a higher amount of funding.

H16: Startups that have attracted an investor from outside Europe are *more likely* to have a higher amount of funding.

H17: Having attracted funding has a positive relationship with having an office abroad. This relationship is expected to be stronger when the startup is in a later investment stage.

H18: Having attracted a foreign investor has a positive relationship with having an office abroad. This relationship is expected to be stronger when the investor is from outside Europe.

H19: Having attracted funding has a positive relationship with having an office outside Europe. This relationship is expected to be stronger when the startup is in a later investment stage.

H20: Having attracted a foreign investor has a positive relationship with having an office outside Europe. This relationship is expected to be stronger when the investor is from outside Europe.

3. Empirical research

This chapter features the empirical analyses that will be used to answer the research questions formulated in the introduction. The chapter starts out with discussing the methodological foundations of the analyses. The Amsterdam and Stockholm context will then be covered more extensively. In the following, the sample of 425 startups and 285 investors will be introduced. How the samples were constructed and subsequently what the samples tell about the cities and their startups. More in-depth analyses will follow that aim to find empirically founded relationships.

3.1 Methodology

The study applies a quantitative research strategy because this best suits the aim of the study. The aim is to explain which startups receive funding and which receive more. Quantitative research allows for finding causality and gives opportunity for generalization beyond the studied samples (Bryman, 2012b). The results are representative for the studied environments and possibly also for environments with the same characteristics. The studied environments are the cities Amsterdam and Stockholm, the research design is thus a comparative case study design (Bryman, 2012a). Stockholm was chosen as an exemplifying case (Bryman, 2012a). The city is comparable in size to Amsterdam and in contrast suggests to have plenty supply of startup funding. The units of analysis are startups, based on data that has been subtracted in one point in time. This means the study employs a cross-sectional research design as well, because the data will be used to find patterns of association with different variables (Bryman, 2012a). In this study three different methods of analysis will be used; binary logistic regressions, linear logistic regressions and bivariate analysis.

Regression analyses use mathematical equations that include different variables to predict a certain outcome (Field, 2013). The outcome is the value of the dependent variable, in this study 'having funding' (yes/no) or the amount of funding (in million euro). In order to establish for example which factors affect the height of funding; all context, firm and investor variables (see figure 6) are included in one model. The variable that represents the amount of funding is placed on the opposite side of the equation. Statistical analysis software (for example SPSS) can then be used to calculate the interaction (Field, 2013). The results show to what extent the factors together predict the height of funding a startup receives (measured by the R-square value; Field, 2013). Moreover it shows how variations in separate variables affect the dependent variable.

Suppose that having an office abroad (yes=1, no=0) results in having five million euro more funding, the regression coefficient of the variable will show a value of +5,0. The results thus show whether variables have a positive or negative effect and how strongly they affect the outcome. Essential is also the statistical significance, the chance that the results show a relationship that does not exist outside the used sample (Bryman, 2012b). The height of this chance (p value) will be tested in all the conducted analyses. In the case there is more than 5% chance that the found relationship is coincidental, the relationship will be considered non-existent. The level of significance also indicates the strength of the relationship; a value below 1% ($p<0,01$) will be used to mark extra strong relationships.

There is a difference between the dependent variables; having funding is a dichotomous variable (no=0, yes=1) and the amount of funding is a ratio variable (Bryman, 2012b). This has consequences for the type of regression analysis involved. Having funding will be analysed by a binary logistic regression model and the amount by a linear regression model. Regression models are based on equations which inherently assume linear relationships. The outcomes of logistic regressions are categorical and therefore not linear (Field, 2013). Logistic regressions however make use of logarithmic transformations to be able to analyse the variables in the same manner (Field, 2013). Both models, linear and logistic, analyse how the independent variables predict the outcome of the dependent variable. However, rather than predicting the change in the dependent variable (e.g. amount of funding), the binary logistic model predicts the probability that categories of the dependent variable (having / not having funding) occur.

The last type of analysis in this study is bivariate analysis. This type of analysis differs from the aforementioned regression analyses in that the results do not explicitly show causality. Contingency tables, the main tool in bivariate analysis (Bryman, 2012c), are however apt in examining the significance and strength of the relationship between two variables. The dependent variable in the analysis will be 'having an office abroad', again a dichotomous variable. The variable will be tested against variables on funding and investors, all dichotomous or ordinal variables. Therefore Spearman's rho will be used, as a measure for the strength of the relationship (Bryman, 2012c). The value of the measure will be negative or positive and will differ between 0 (no relationship) and -1 or 1 (perfect relationship). The Spearman correlation coefficient will be used in tandem with the level of significance to give meaning to the studied relationships.

3.2 Introduction cases

Amsterdam and Stockholm are compared in the study, because they provide the context for the startup. To better understand the different environments, relevant factors will be compared and distinguishing factors will be highlighted.

Earlier studies have shown that government policies (on the national level) influence the supply of entrepreneurs and capital. The Global Entrepreneurship Monitor (GEM) is an influential annual report on entrepreneurial regions (GERA, 2016c). The figures on the Netherlands and Sweden help understanding the context of both cities. The GEM 2016 has three government related variables; government support, taxes and regulations, and entrepreneurship programmes. The Netherlands ranks better than Sweden on all variables; ranking in the top ten of 62 countries, while Sweden takes a middle position (GERA, 2016a). This is surprising because these factors were expected to have a positive effect on (early stage) funding and the Netherlands has considerably less venture capital circulating. On the other hand, the results were anticipated as Amsterdam shows more entrepreneurial activity, evidenced by the number of startups. Before turning to the figures on startups and funding, some longitudinal GEM data of interest will be treated.

At the heart of the Global Entrepreneurship Monitor is the concept Total Early-Stage Entrepreneurship (TEA), the share of the working population involved in setting up a business or owning a business of up to 3,5 years old (GERA, 2016a). In figure 7 the TEA of both cities is shown over the years in which the startups in the sample were started. The figures show indeed that there is more entrepreneurial activity in the Netherlands. As mentioned in the introduction Amsterdam is considered to lack startups with 'international growth mentality'. The aspects of growth and internationalization are also featured in the GEM (see figures 8 and 9). The employment growth of young businesses in both countries suffered equally from recession (declining trend up until 2013). The young businesses in Sweden score better on the indicators of growth and internationalization. However, the indicators for the Netherlands show an upward trend.

Figure 7: Total Early-stage Entrepreneurial Activity (GERA, 2016b)
Share of working population involved in setting up or owning a max. 3,5 year old business

The Netherlands
Sweden

10,3%
9,3%
9,5%
8,2%
8,3%
7,6%
7,2%
7,2%
6,4%
5,8%

2011   2012   2013   2014   2015
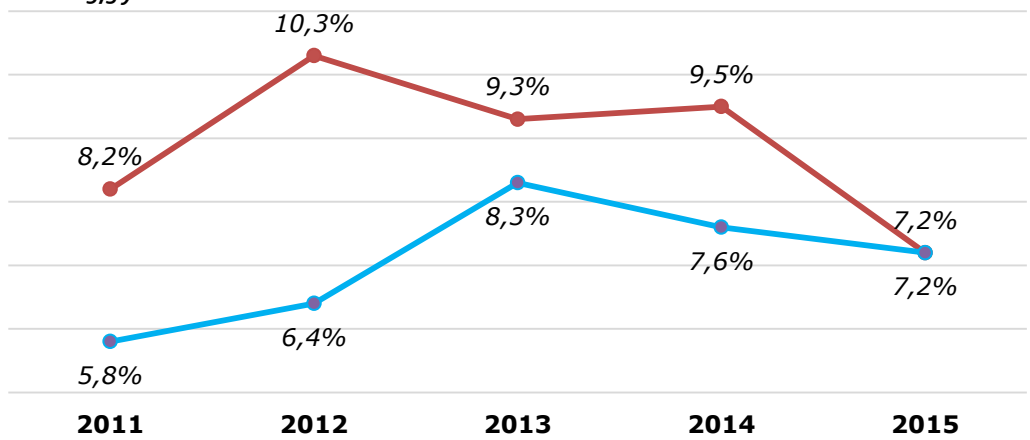
Figure 8: Growth Expectation (GERA, 2016b)
Share of TEA expecting to hire min. five employees within 5 year

The Netherlands
Sweden

26,4%
23,7%
22,0%
21,5%
18,3%
19,5%
16,6%
18,0%
15,0%
14,0%

2011   2012   2013   2014   2015
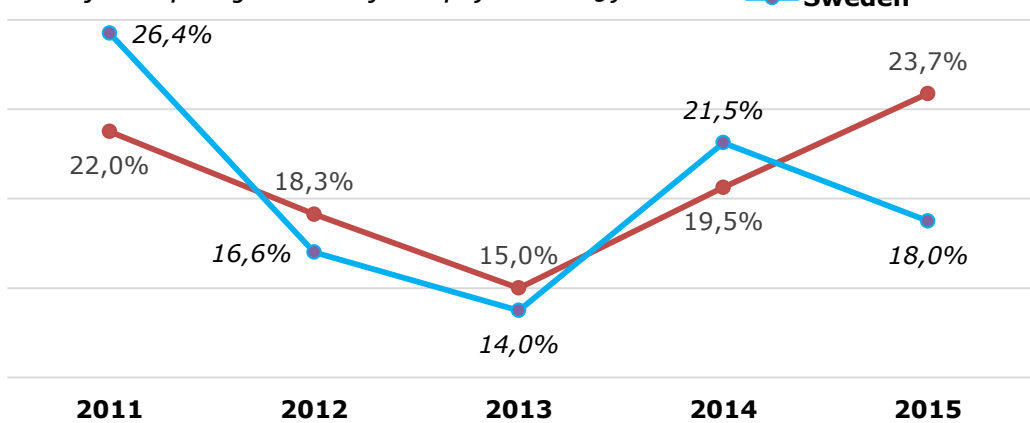
Figure 9: International Orientation (GERA, 2016b)
Share of TEA with min. 25% foreign customers

The Netherlands
Sweden

27,4%
21,9%   22,2%
19,7%
15,3%
17,8%
15,9%
13,3%   13,6%   14,3%

2011   2012   2013   2014   2015
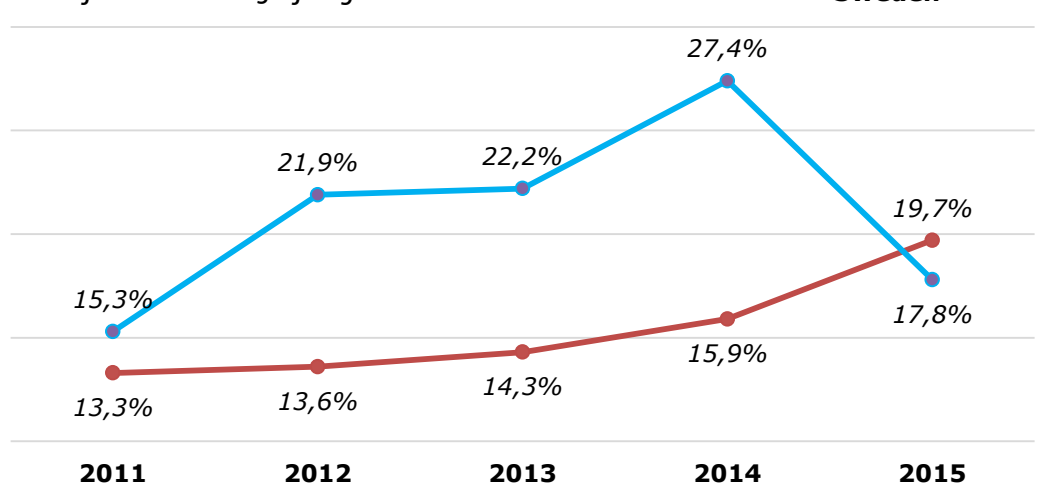
Startup cities are often distinguished by their success stories. Amsterdam has been around a decade without new outstanding technology companies. The in the 90's founded technology business TomTom and Booking.com managed to grow into globally renowned companies (Egusa & Cohen, 2015). The latest successful technology companies out of Amsterdam only raised their first funding round in 2014 or 2015; WeTransfer (€22M total funding), Travelbird (€36M total), BitFury (€53M total) and Adyen (EDCi, 2015; Dealroom, 2016c). Adyen grew out to be a unicorn, a technology company with a billion dollar valuation (GP Bullhound, 2015). In recent years the Amsterdam city government distinguished itself by an integrated effort to stimulate digital and entrepreneurial initiatives. Recognized by the European Commission, that granted the city with the title European Capital of Innovation this year (European Commission, 2016). StartupAmsterdam is part of the city arrangement, also recognized by prominent media as the European Digital City Index (EDCi, 2015) and Forbes (Karabell, 2016). The programme is an extension of the nation-wide Startup Delta programme that had the goal of improving the international position of Dutch startups (StartupAmsterdam, 2015: 3). Both helped creating a more facilitating environment for startups, possibly reflected in the government variables of the GEM,

Stockholm has in the last decade become known for generating unicorns; Skype (2011 acquisition $8,5BN), Mojang (2014 acquisition $2,5BN), King.com (2015 acquisition $5,9BN), Klarna ($2,3BN) and leading European $8,5BN unicorn Spotify (EDCi, 2015b; Dealroom, 2016c; GP Bullhound, 2016). The city and country furthermore rank high on ICT related factors; the highest share of ICT entrepreneurs in the GEM (GSA, 2016b) and multiple factors of the digital infrastructure (EDCi, 2016b). However, the success stories are most distinguishing. The effects seem to be found in the capital market. Looking back at the literature, the IPO market is considered to have a determining effect on (late stage) venture capital. Figures on 2014 and 2015 show that indeed more companies reach an IPO in Stockholm than in Amsterdam, 53 compared to 6 in 2014 and 72 to 8 in 2015 (PwC, 2016). Indicating that the stock market of Stockholm is more attuned to new companies.

Lastly the most noteworthy figures on both cities; the number of startups and the amount of funding in both cities. Establishing the exact number of startups in both cities seems an impossible task. Because databases employ diverging definitions and suffer from incomplete data. Looking at multiple sources, however, it shows that Amsterdam has more startups than Stockholm (see figure 10). In

terms of funding, young technology companies in Stockholm manage to attract substantially more than in Amsterdam. Figure 11 shows the amount of funding attracted in both cities. The graph is drawn in logarithmic scale to limit the distortion of the billion euro raised in Stockholm in Q1 2016 (Spotify raised a billion dollars; Dealroom, 2016b). The year 2015 showed a decline in funding in Amsterdam (continued in Q1 2016), while Stockholm shows an upward trend. The figures suggest that Stockholm is at the height of its investment cycle (Nanda & Rhodes-Kropf, 2013).

Figure 10: Number of startups in Amsterdam and Stockholm.

Source	Amsterdam	Stockholm
AngelList (2016a; 2016b)	1049	551
Crunchbase (2016) funded 2011-2015	226	120
StartupAmsterdam (2016a)	1202	X
StartupBlink (2016)	X	185
StartupLocation (2016)	X	91

Figure 11: Total funding per quarter in million euro (Dealroom, 2016b)
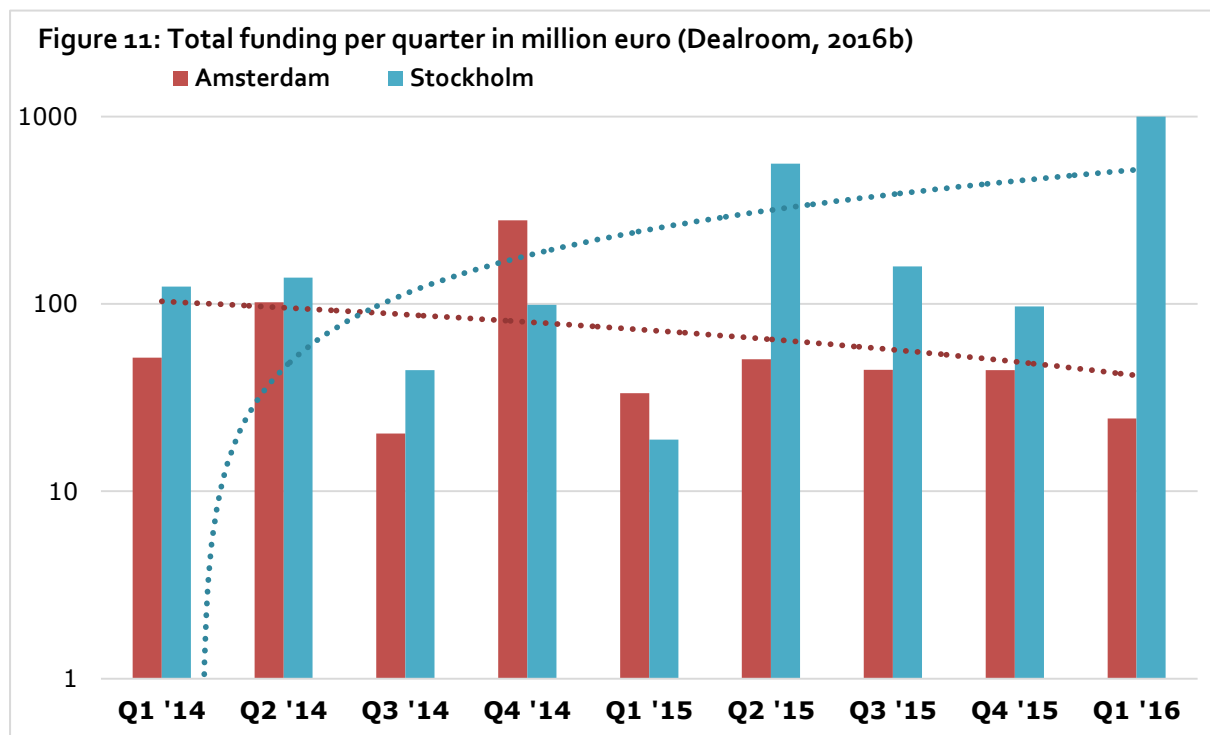
3.3 Sample creation

For the analyses in this study, a sample of 425 startups and additionally 285 investors is used. In the following, the origin and realization of the sample will be described to account for objectivity and replicability (Bryman, 2012b).

The sample was constructed out of two databases provided by Dealroom. The organization monitors over half a million technology companies and five thousand investors in Europe and beyond with algorithms and natural language processing. The data is complemented by a community of thousands of industry specialists. Lastly, the data is verified by a rigorous internal manual curation process (Dealroom, 2016a). Despite the latter curation process, the two databases had imperfections, specifically many companies with missing information. The two databases were firstly reduced to the companies that had at least been updated in the last year[3], leaving 667 companies in Amsterdam and 166 in Stockholm. Controlling for maximum age in the startup definition, only companies founded between 2011 and 2015 were included (leaving 389 companies in Amsterdam and 122 in Stockholm). These were then subject to an additional refinement. Companies that still had missing information were excluded. Cases that showed anomalies were double checked with external resources to see if the irregular data checked out and if the company was still active[4]. Lastly, some companies that did not fit the requirements for a startup were excluded (for example food producers, co-working spaces and startup service providers). This led to a sample of 327 startups in Amsterdam and 98 startups in in Stockholm.

All cases had information about the amount of funding they had received until the first quarter of 2016. For a share of the startups was noted which investors they had attracted. This data was complemented by external data from Crunchbase (an extensive database on 'innovative' companies and investors) and industry platforms such as StartupJuncture (the Netherlands) and Breakit (Sweden). After the investors were identified, a sample was created with information about their location (city, country), their type and the investment stage they focus on. This information was gathered from external resources, mainly through Dealroom, Crunchbase, LinkedIn and company websites. The first two sources always state the investment focus of the investor; seed, early, later

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[3] The companies are continuously updated in case of funding rounds. However, companies without funding also require updating.
[4] Symptoms for inactive companies were: non-working website, non-active employees, last social media activity (more than) a year ago. When a startup was acquired, it was considered as inactive.

(expansion). The information provided by the investment companies themselves virtually always do as well. In case the investment focus is unclear, individual funding rounds could prove conclusive. Seed rounds signal seed stage investors, series A rounds signal early stage investors, and series B or later rounds signal expansion stage investors (Van Gool, 2015). If information on specific investments was not available either, the investors were included in the broadest category 'early and expansion' (see figure 11). The acquisition / buyout stage is not included, because there were no investors found that solely do those investments.

The reality of the investors involved with the startups proved more diverse than the literature suggested. Nonetheless, fundamentals gained from the literature helped making sense out of the plurality of investors. Accelerators, angels, crowdfund institutions and incubators were distinguished as investors that focus on solely seed investments. Crowdfunding institution were seldom used, two startups in the sample even undertook self-organized crowdfunding. Incubators are also rarely found as investor, as oppose to accelerators. Angels prove to be widely involved in the startup funding. There were two investors self-defined as angel networks, these had a focus on early stage funding. The angel networks have traits of venture capital firms, while the 'venture developer' type has traits of an angel or accelerator (both showing the plurality of investors). The investor type 8 consists of entities that did not explicitly make venture capital investments. The private equity firms prove consistent with the literature; they rarely invest in startups and have a late(r) stage focus. This leaves venture capital investors (type 4 and 8), which as expected always to an extent focus on early stage funding. A large share of VC investors also focus on expansion stage financing, but rarely exclusively since the investors target by definition young companies.

Figure 12: Frequency distribution of the investor sample according to funding stage.

	Only Seed	Early (incl. seed)	Early (incl. seed) + Expansion	Expansion (excl. early)
1. Accelerator	15			
2. Angel (network)	109	2		
3. Corporate		1	9	
4. Corporate VC	2	3	14	1
5. Crowdfund institution	5			
6. Incubator	3			
7. VC firm / fund / venture developer	14	51	46	1
8. Investment firm / fund / bank	5	2	5	1
9. Private equity firm			2	2

The last step of the construction of the sample was classifying the startups on the basis of their investor and investment. All the investors were given codes that represented their location (same city, same country, Europe, outside Europe), focus stage(s) and type (accelerator, angel, VC, other). The codes of the attracted investor(s) were subsequently added to the corresponding startups. By doing so, dummy variables could be created that determined whether a startup for example had attracted funding from outside Europe (yes/no) or attracted an angel investor (yes/no). Additionally, the investment stage of the startup was determined on the basis of the amount of funding and the focus stage(s) of its investors. For due diligence on the selection of the investment foci of the investors (see figure 12), the investment rounds of startups were individually examined. The before established classification of the investors proved to cover the reality well. Additionally, the conjunction between amount of funding and investment stage of individual startups was examined and taken in consideration. This led to the selection procedure in figure 13, which proved best in capturing the actual stage of a startup.

Figure 13: Conceptualization of the classification of startups according to investment stage.
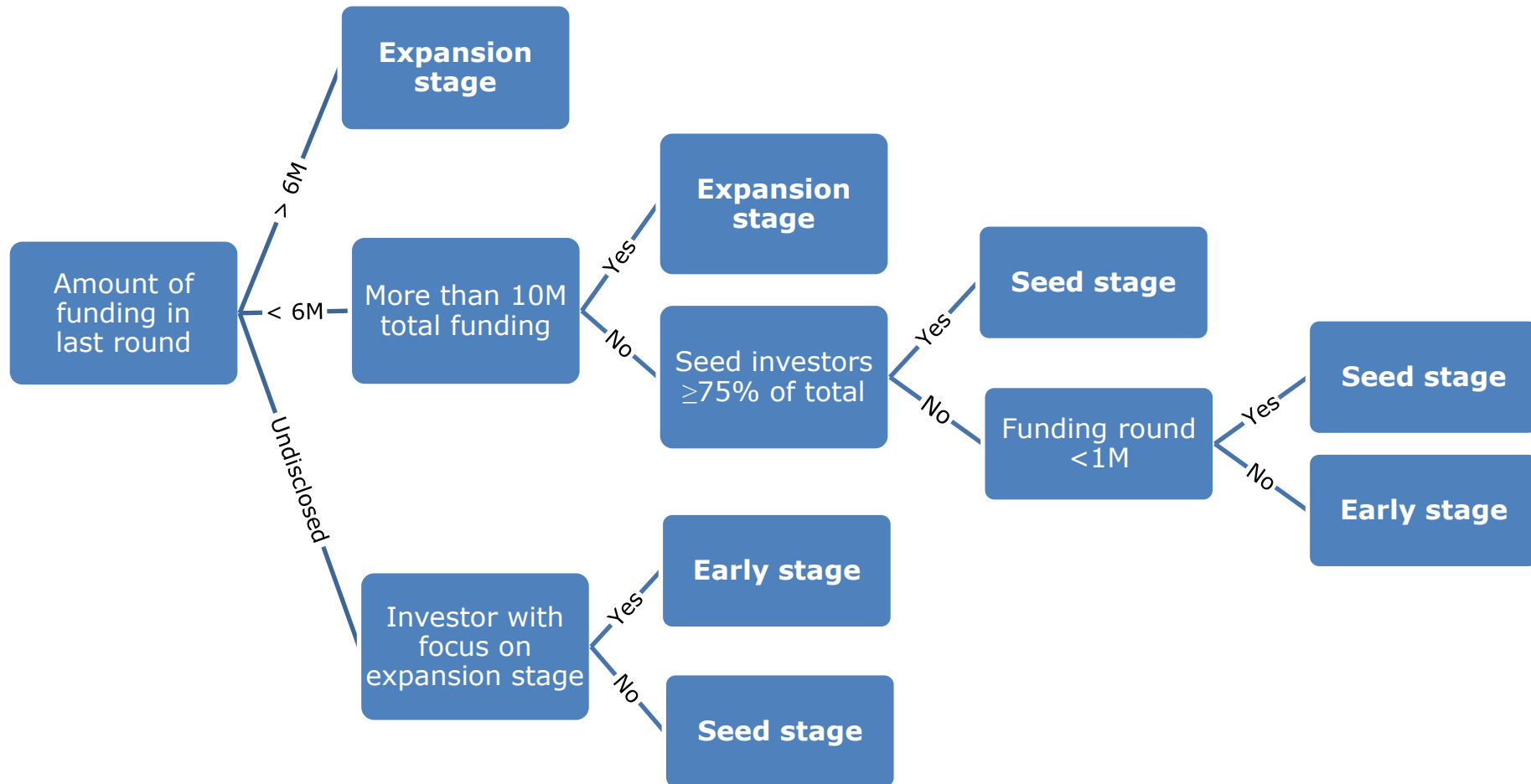
3.4 Sample description

This paragraph will describe the features of the sample with a focus on the differences between both cities' startups. Thereby highlighting the funding and geography.

The amount of startups is skewed in favour of Amsterdam, the sample consist of 327 startups in Amsterdam and 98 startups in Stockholm. As databases on startups are always to an extent biased or incomplete, it is hard to say whether a sample approaches reality to perfection. Two things speak in favour of the sample; the sample supports that are more startups in Amsterdam (as in figure 10), and the 'age' of the startups is distributed equally in both cities (see figure 15). The data tells what the startups have achieved over the period from their founding until the first quarter of 2016 (see figure 14). The equal distribution ensures that the comparison between both cities is not distorted because of age.

Figure 14: Visualization of time in operation until data gathering (by year of funding).
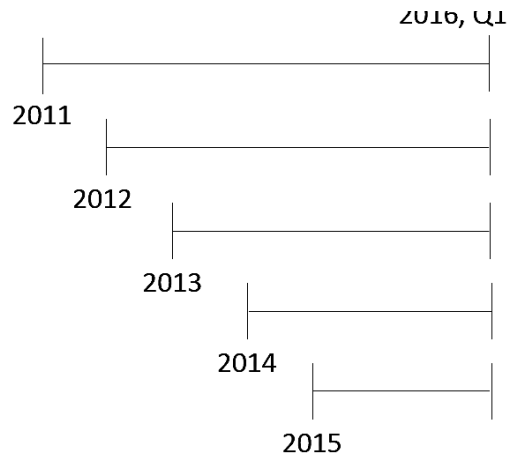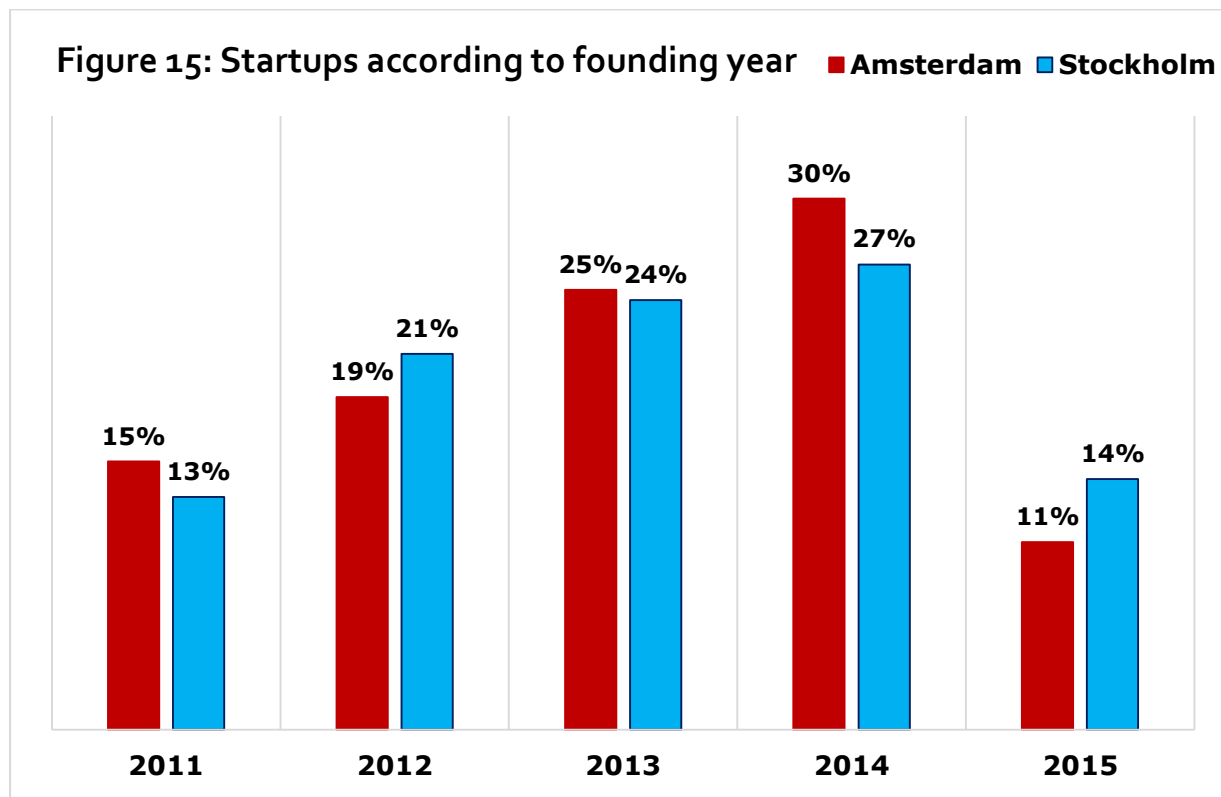
Figure 15: Startups according to founding year ■ Amsterdam ■ Stockholm

Year	Amsterdam	Stockholm
2011	15%	13%
2012	19%	21%
2013	25%	24%
2014	30%	27%
2015	11%	14%

Funding

The sample again confirms that startups in Amsterdam attract less funding than those in Stockholm. The share of startups with funding is twice as high in Stockholm. Around 80% startups of the total, compared to only 40% in Amsterdam (see figures 16 and 17).

The startups in Stockholm attract higher amounts of funding. This is reflected in the investment stages that have been assigned to the startups. Figures 16 and 17 show that the vast majority of startups with funding in Amsterdam are in the seed stage. Additionally, startups in Stockholm to a larger extent reach later investment stages. The same picture emerges from figure 18 that breaks down the startups in both cities into categories of total funding received. The majority of startups that have received funding, in both cities, received half a million euro or less.

Looking at the higher categories of funding, startups in Stockholm attract notably more. A quarter of the startups with funding in Stockholm have received two million or more, in Amsterdam this is only one-tenth. The 98 startups in Stockholm have altogether attracted just over 309 million euro funding, the 327 startups in Amsterdam raised merely 262 million euro. This translates to an average of just over 800 thousand euro funding per startup in Amsterdam and almost 3,2 million per startup in Stockholm. The outliers are Magine in Stockholm with 54,1 million euro and Elastic from Amsterdam with 94,5 million funding. The latter exception shows that it is not impossible to attract substantial amounts of funding in Amsterdam.

Figure 18: Startups according to millions funding

33%

60%

40%

6%

1%

■No funding ▢Seed ▢Early ■Expansion
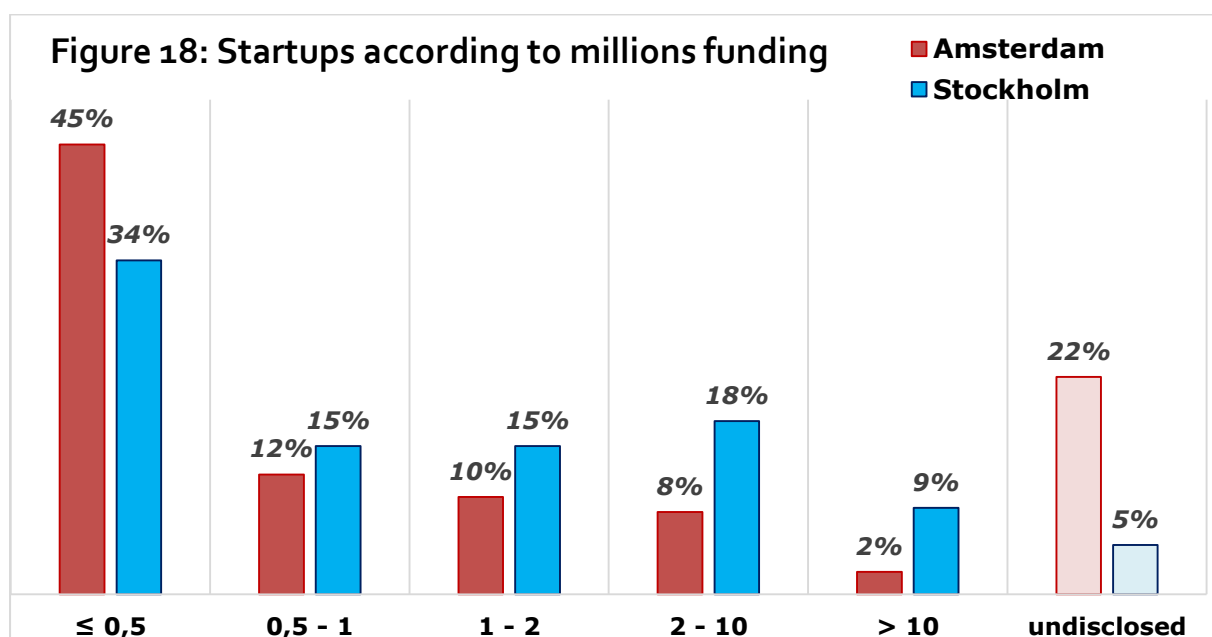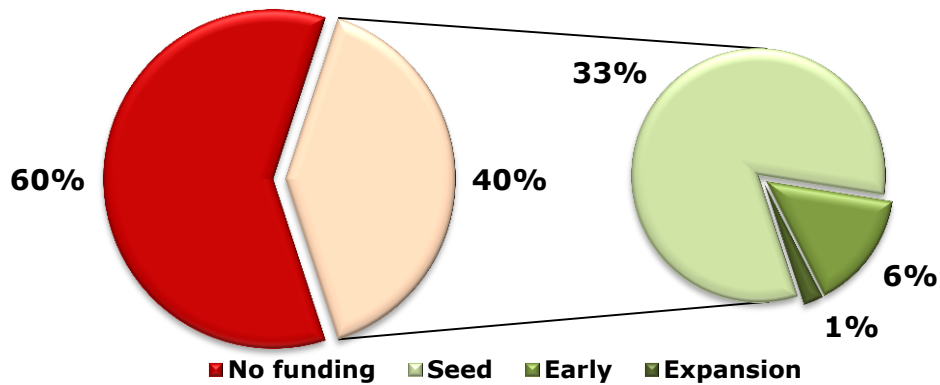
Figure 17: Startups Stockholm according to investment stage

53%

18%

82%

9%

20%

■No funding ▢Seed ▢Early ■Expansion
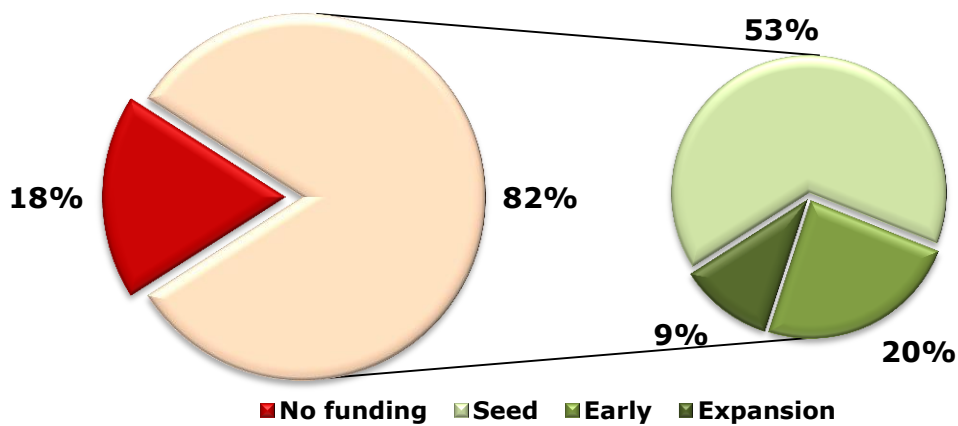
In absolute numbers there are more investors involved in the startups in Stockholm. The sample of investors consists of 134 that invested in 132 Amsterdam startups and 151 investors unique investors involved in 80 startups in Stockholm. This uneven distribution can be explained. Firstly there are less startups in Amsterdam that attracted multiple investors, 49% compared with 59% in Stockholm (with on average 3,5 investors). Secondly, some investors in Amsterdam have invested in a large share of startups. Specifically the accelerator programmes Startupbootcamp and Rockstart. Both provide 15.000 euro and working space during a 3 and 5 month programme respectively (Rockstart, 2016; Startupbootcamp, 2016). Rockstart is as investor involved in 27% of the startups and Startupbootcamp in 14%.

The amounts of funding and the investment stages of the startups do not tell the full story; therefore the types of investors attracted are taken in account. The amount of VC companies involved with startups in both cities is equal at 66. This means that VC investors account for a relatively larger share of the investors in Amsterdam, the largest of all investors (see figure 19). In Stockholm, angel

investors account for the biggest share of investors (52%, see figure 20). Amsterdam and Stockholm differ in this respect, as Amsterdam has less angel investors but more accelerators that take up a notable share of the investors. These figures however do not paint the expected picture that the venture capital market conditions are worse for Amsterdam startups. However, figure 21 shows that there is a bigger share of VC companies in Stockholm that focuses on later stage investments. Moreover, VC companies in Amsterdam tend focus relatively more on seed investments. Startups in Stockholm in addition have attracted twice as much VC companies from abroad (42 compared with 21, or 28% and 16%). More than half of those VC companies also focus on later stage investments.

Figure 19: Types of investors attracted by startups from Amsterdam

Angel 30% ■ Accelerator 10% ■ VC 49% ■ Other 10%

■ **Angel** ■ **Accelerator** ■ **VC** ■ **Other**

Figure 20: Types of investors attracted by startups from Stockholm

Angel 53% ■ Accelerator 3% ■ VC 44% ■ Other 1%

■ **Angel** ■ **Accelerator** ■ **VC** ■ **Other**

Figure 21: Investment focus VC companies in both cities
■ **Amsterdam** □ **Stockholm**

	(only) Seed stage	(also) Expansion stage
Amsterdam	21%	31%
Stockholm	5%	50%

Geography

Internationalization of startups is in this study measured by having an office abroad. It shows that startups in Stockholm are more internationalized, 16% has an office abroad compared with 7% of the startups in Amsterdam. A large share of the startups in Amsterdam that has an office abroad, has on office outside Europe (75% compared with 63% of the startups from Stockholm). The preferred location within Europe is London, 30% of the startups in both cities that have an office abroad have on office in London. Outside Europe the preferred location is California, accounting for almost 30% of the startups from Amsterdam and 25% of the startups from Stockholm. New York is also a place to go for startups in Stockholm (almost 20%). The following will show whether same patterns exist among the investors.

Looking at the geography of the funding, 70% of the startups in both cities have attracted funding from within the city. The two groups of startups however differ in their reach of international investors. An extra 14% startups in Amsterdam attracted investors from within the country, while a third of the startups in Stockholm attracted an investor from other countries in Europe. Figure 22 illustrates that a smaller share of the startups in Amsterdam attracted investors from outside their country and outside Europe.

Figure 22: Distribution of attracted investors
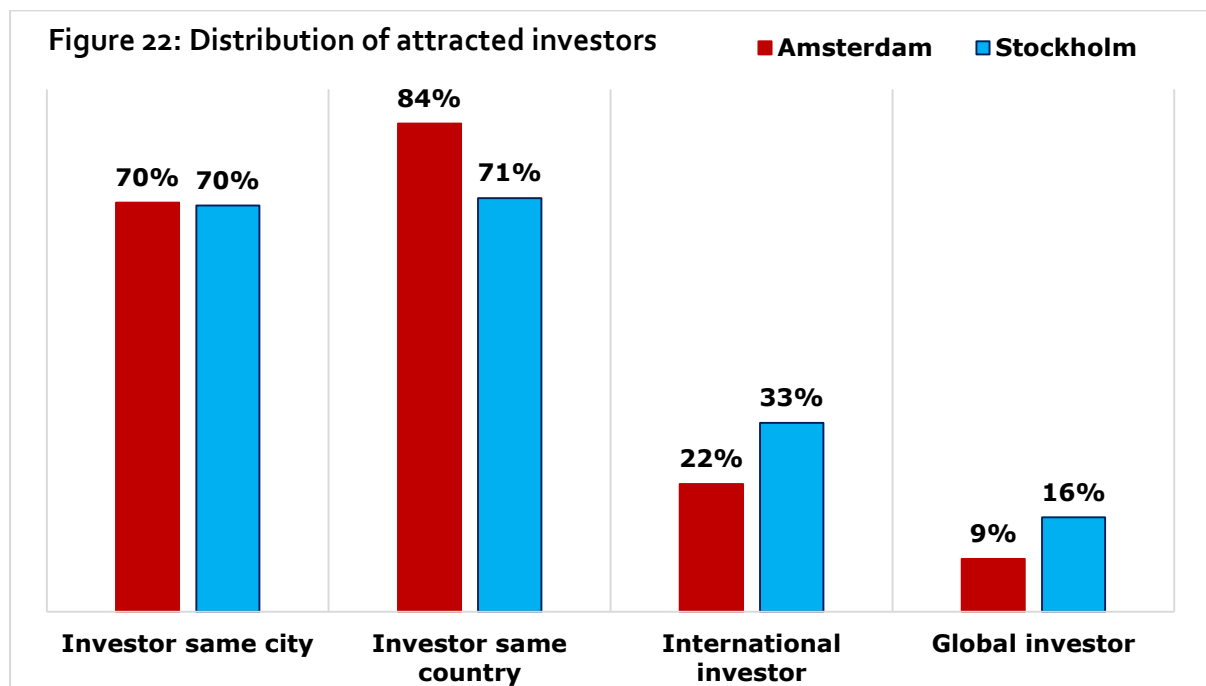
On the following pages the countries of the investors that invested in the startups in Amsterdam and Stockholm are mapped out. Again, it shows that the majority of the investors originate from the home country. Furthermore, the neighbouring countries are important beneficiaries. This shows again that geography matters with regards to funding. Once more the US and the UK appear to be important centres. This specifically concerns the hubs London and California and New York. Investors out of London make up 20% and 26% of the total foreign investors in startups from Amsterdam and Stockholm. In the United States the startups in both cities have different 'preferred suppliers'. Around a fifth of the foreign investors in Amsterdam startups come from California, whereas around a fifth of the foreign investors in startups from Stockholm come out of New York.

Figure 23: The origins of the funding of Amsterdam startups mapped out.

Funding startups Amsterdam (country of origin investors)

Percentage of total investors

0 % 1 % 2 - 5 % 6 - 15 % > 15 %

0 500 1.000 2.000 Kilometers

Funding startups Stockholm (country of origin investors)

Percentage of total investors

0 %   1 %   2-5 %   6-15 %   >15 %

0   500 1.000   2.000 Kilometers
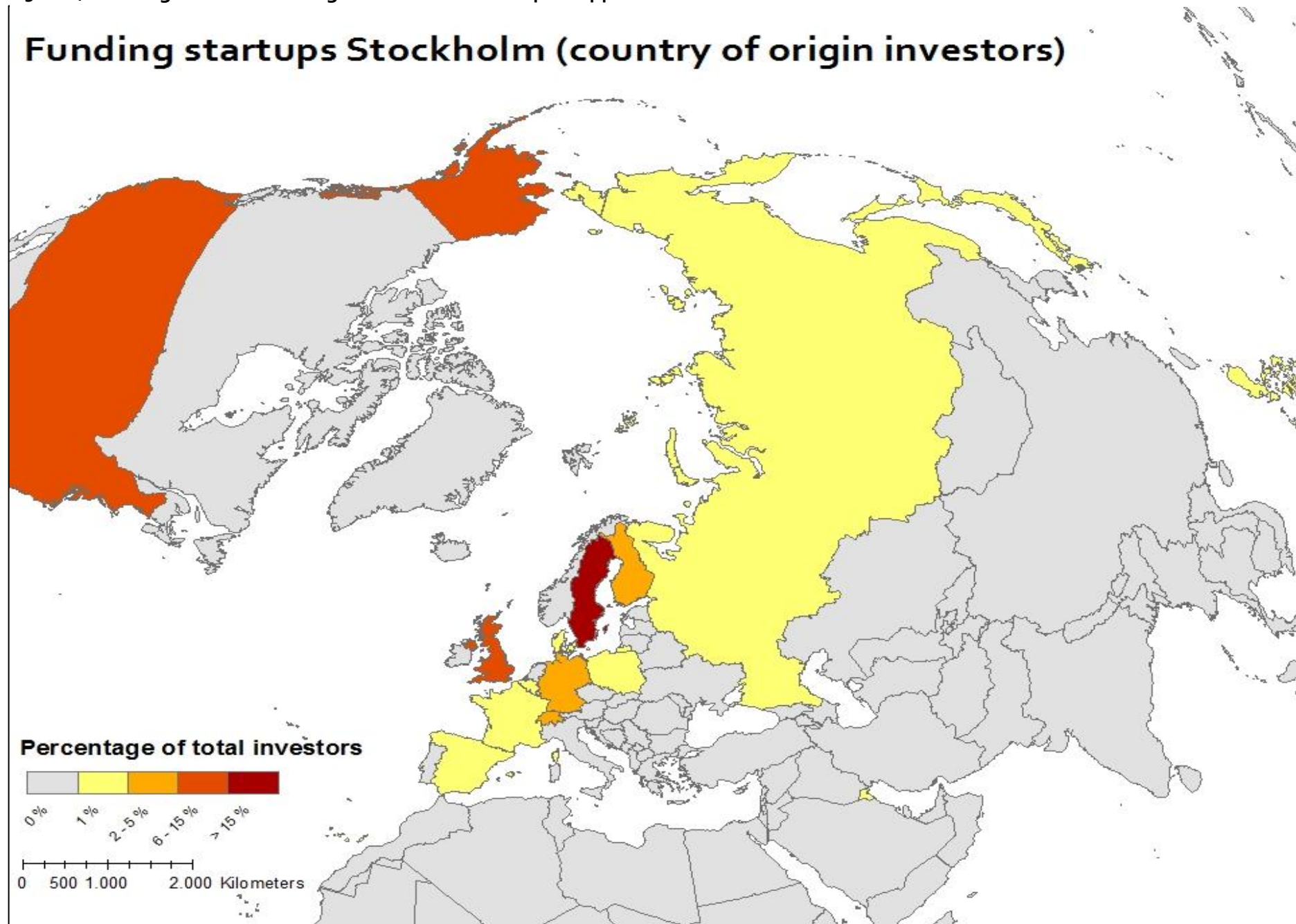
3.5 Variable description

Before turning to the main analyses in the next paragraphs, it is important to get a grip on the variables involved. The rationale behind the variables has been covered in 2.3, this paragraph will show the statistics.

Dependent variables

The dependent variable of the first analysis, the binary logistic regression, is *'having funding'*. A dichotomous or 'dummy variable' that shows whether a startup has attracted funding or not.

'having funding' (n=425)	
0 (no); n = 213	1 (yes); n = 212

The dependent variable of the second analysis, the linear logistic regression, is the *amount of funding*. A ratio variable that represents the total attracted funding in million euro. The startups that attracted no funding are excluded, among others because there are variables included in the analysis that only apply for startups that attracted funding.

Amount of funding (n=212)	
min. = 0,02	max. = 94,5
med. = 0,5	avg. = 3,5

Independent variables

In both analyses the location of the startup will be used as a dummy variable that possibly influences the funding of a startup.

City (n=425)	
0 (Stockholm); n = 98	1 (Amsterdam); n = 327

Although all companies in the sample are considered startups, there is difference between the startups in terms of *years in existence*. This interval variable will test whether the differences in age distort the results. The variable is measured as full years between the founding year and the year of data gathering (2016).

Years in existence (n=425)
1 (year); n = 49
2 (years); n = 124
3 (years); n = 106
4 (years); n = 83
5 (years); n = 63

med. = 3	avg. = 3

In the conceptual framework the *industries* were introduced that are included in the analyses. The industries were chosen because at least 10% of the startups were in either of the industries. This limit was chosen so that the results are likely to be more meaningful, rather than would be the case if all industries were included.

Analytics industry (n=425)		FinTech industry (n=425)		Media industry (n=425)	
0 (no); n = 373	1 (yes); n = 52; % = 12,2	0 (no); n = 381	1 (yes); n = 44; % = 10,4	0 (no); n = 382	1 (yes); n = 43; % = 10,1

A central feature in the literature on the startup was the *target group* of the businesses. As mentioned in the conceptual framework, the study tests for the effect of B2B alone and B2B with B2C. Both constructed as dummy variables.

Only B2B (n=425)		B2B with B2C (n=425)	
0 (no); n = 231	1 (yes); n = 194	0 (no); n = 351	1 (yes); n = 74

In the same manner as the industries, the most common revenue models of the startups were conceptualized (2.3.2) and constructed as dummy variables for the analyses.

Commission (n=425)		Freemium (n=425)		Subscription (n=425)	
0 (no); n = 332	1 (yes); n = 93; % = 21,9	0 (no); n = 369	1 (yes); n = 56; % = 15,2	0 (no); n = 238	1 (yes); n = 187; % = 44

The information of whether a startup has an office abroad is included in the analysis to see the effect on funding. Once again, included as dummy variable.

Office abroad (n=425)	
0 (no); n = 406	1 (yes); n = 19

Independent variables linear regression analysis

The linear regression will only include startups with funding in the analysis. The analysis will feature extra dummy variables on the investors; their location and their type (see below tables).

Foreign investor Europe (n=212)		Foreign investor outside Europe (n=212)	
0 (no); n = 156	1 (yes); n = 56	0 (no); n = 186	1 (yes); n = 26

Accelerator (n=212)		Angel (n=212)		VC (n=212)	
0 (no); n = 147	1 (yes); n = 65	0 (no); n = 152	1 (yes); n = 60	0 (no); n = 88	1 (yes); n = 124

3.6 Regression analyses

This paragraph will feature the two main analyses; the binary logistic regression analysis and the linear regression analysis. The first analysis aims to determine the factors that influence whether a startup receives funding or not. The latter has the goal to find which factors influence the height of the funding. After the analyses the hypotheses will be reviewed and accepted or dismissed.

3.6.1 Binary logistic regression

The research question central to the logistic regression is: w*hat characteristics determine whether a startup attracts funding or not?* A selection has been made of contextual (city) and firm variables (see figure 6 and 3.4).

The resulted regression model shows that altogether the included variables predict the probability of a startup having funding in a significant way (see figure 24). The Nagelkerke R-square is the coefficient that shows the predictive value of a logistic regression model, ranging from 0 to 1 (Field, 2008). The value of 0,277 shows that the model does relatively well in explaining which startups do and do not receive funding. There are five variables in the model that significantly influence whether a startup has funding or not. The variables with the statistically most significant effect are the city (Amsterdam) and having an office abroad. It shows that startups in Amsterdam are less likely to have funding than startups in Stockholm. Startups that have an office abroad are more likely to have received funding.

Only targeting businesses (B2B), rather than only consumers or both, shows to have a negative effect on having funding. The statistics, however, do not show a significant effect of having a broader target group, both B2B and B2C. All three included methods of generating revenue show to have a positive effect on having funding. The odds ratio is a measure that shows how much the odds of an outcome (e.g. having funding) change (Field, 2008), when the variable changes one unit (in case of dummy variable; yes is 1 unit increase from no). The odds ratios show that having a freemium model increases the odds of having funding the most.

Figure 24: Logistic Regression Model 'having funding'	
Relationship: positive: + , negative: - , not significant: o Level of significance: $p<0,05$ = + / - , $p<0,01$ = ++ / - -	
City (Amsterdam)	- -
Years in existence	o
Analytics industry	o
FinTech industry	o
Media industry	o
B2B	-
B2B and B2C	o
Commission revenue	+
Freemium revenue	+
Subscription revenue	+
Office abroad	++
n= 425	p= 0,000	Nagelkerke R-square= 0,277	

Instead of using the city of the startups as a variable, the regression analysis can also be done separately with startups in Amsterdam and in Stockholm. The level of significance of the logistic regression model of startups in Stockholm proved to be above the limit of $p<0,05$ (p=0,15) and will therefore not be treated. The level of significance can be explained by the characteristics of the sample. Thee sample consists of less startups than in the sample of startups in Amsterdam. This increases the chances of finding coincidental relationships. Furthermore, the model predicts *both* the probability of startups not having funding as the probability of startups that have funding. The model with the full sample predicted 82% correct which startups that did not have funding and a much lower 60% which startups have funding. Predicting the outcome in the sample of Stockholm, that consists of more startups *with* funding, is thus harder for the model. The difference between the first model and the model with only startups from Amsterdam (see figure 25) is that the negative effect of B2B loses significance and that years in existence gain significance. The latter could suggest that the investors that target Amsterdam startups are more risk averse, since they invest in startups that are longer around.

Figure 25: Logistic Regression Model 'having funding' Amsterdam	
Relationship: positive: + , negative: - , not significant: o Level of significance: p<0,05 = + / - , p<0,01 = ++ / - -	
Years in existence	+
Analytics industry	o
FinTech industry	o
Media industry	o
B2B	*o*
B2B and B2C	o
Commission revenue	+
Freemium revenue	+
Subscription revenue	+
Office abroad	++
n= 327	p= 0,000	Nagelkerke R-square= 0,111	

Preliminary conclusions

The hypotheses constructed in 2.3.3 were not solely constructed for the logistic regression and can therefore not be entirely confirmed or discarded. Hypothesis 1 on the effect of the location holds true for having funding, Amsterdam startups are less likely to have funding. Hypothesis 2 on the effect of age seems to be false, however the age does show to have an effect in Amsterdam. It can however be argued that the effect of age is symptomatic for Amsterdam, rather than considering it a falsification of the sample definition. Hypothesis 3,4 and 5 regarding the startup industries prove to be at least partly false. It shows that being part of a certain industry does not prove success or failure in attracting funding. The hypotheses on the target groups (H6 and H7) do not seem to hold, as the variables showed no or opposite effects. The revenue models all showed to lead to significantly bigger change of receiving funding. For commission (H8) and subscription (H9) this was expected, the hypothesis for subscription was however opposite (H10). However, the subscription model can also be seen as interesting for investors as the model can result in a stable stream of revenue. Lastly 'having an office abroad', the variable with the highest odds ratio in both models, proves the hypothesis right in terms of attracting funding.

3.6.2 Linear logistic regression

The research question central to the logistic regression is: *what characteristics determine the amount of funding a startup attracts?* As opposed to the previous logistic regression, additional variables on investors are included (see figure 6 and 3.4) and startups without funding have been excluded.

Although the number of startups included has decreased, the model still shows statistical significance and considerable predictive value (R-square 0,262). The difference is however that the number of variables that show significant relationships are decreased (see figure 26). This is remarkable since the number of independent variables in the model have increased. The variable of having an office abroad again shows a positive effect. The same applies, and statistically even stronger, for the newly introduced variable of having an investor outside Europe. The results of the model allowed for rethinking on the variables used. The types of investors were included in the model, because they were expected to have an effect on subsequent funding. The model in figure 26 however does not show whether they do and which of the types is potential more preferable. Therefore the variables have been transformed into renewed dummy variables, showing that a startup has attracted the type investor in combination with multiple rounds of investment. The variable description below shows that the occurrence of subsequent funding is the highest among startups with a VC investor.

Accelerator (mltpl. rounds); n=212		Angel (mltpl. rounds); n=212		VC (mltpl. rounds); n=212	
0 (no); n = 197	1 (yes); n = 15	0 (no); n = 192	1 (yes); n = 20	0 (no); n = 160	1 (yes); n = 52
Share of total startups with accelerator = 23 %		Share of total startups with angel investor = 33,3 %		Share of total startups with VC investor = 42%	

Figure 26: Linear Regression Model 'amount of funding'	
Relationship: positive: + , negative: - , not significant: o	
Level of significance: $p<0.05 = + / -$, $p<0.01 = ++ / - -$	
City (Amsterdam)	o
Years in existence	o
Analytics industry	o
FinTech industry	o
Media industry	o
B2B	o
B2B and B2C	o
Commission revenue	o
Freemium revenue	o
Subscription revenue	o
Office abroad	+
Angel	o
Accelerator	o
VC	o
Investor abroad (Europe)	o
Investor abroad (outside Europe)	++
n= 212	p= 0.000	R-square= 0,262	

The regression model with the newly constructed variables shows more explanatory value (R-square 0.323 compared with 0.262). Understandable, as multiple rounds of funding coincide with higher amounts of funding. Interestingly the effects of the investor variables vary considerably, the effect of having been part of an accelerator is even negative (see figure 27). This is can be explained by the working of the programmes, most of the startups get 15.000 euro at the outset and raise hundreds of thousands at the end of the programme. An amount that is relatively low compared to the rest of the startups with funding.

The location of the startup unexpectedly does not seem to predict the height of the funding received. The revenue model also seizes to be of importance when looking at the height of funding. The same applies for the target groups, which effects earlier already have been questioned. The non-existent effect of age, again favours the sampling. Remarkable is the significant negative effect of the media industry that appears in the model. It confirms that the limited size and or prospects of the industry can hamper the amount of funding received. The other industries however do not show significant effects. The 'global investor' and the office abroad, again prove to be positively associated with the height of funding.

Figure 27: Linear Regression Model 'amount of funding' (multiple round variables)	
Relationship: positive: + , negative: - , not significant: o	
Level of significance: $p<0.05$ = + / - , $p<0.01$ = ++ / - -	
City (Amsterdam)	o
Years in existence	o
Analytics industry	o
FinTech industry	o
Media industry	-
B2B	o
B2B and B2C	o
Commission revenue	o
Freemium revenue	o
Subscription revenue	o
Office abroad	+
Angel (mltpl. rounds of funding)	+
Accelerator (mltpl. rounds of funding)	-
VC (mltpl. rounds of funding)	++
Investor abroad (Europe)	o
Investor abroad (outside Europe)	+
n= 212 | p= 0.000 | R-square= 0.323	

Including the multiple round variables allowed for splitting the regression analysis into two significant regression models per city (see figure 28). There are considerable differences between the two cities with regards to the effects of investors. In Amsterdam it is rewarding for startups to have an angel investor on board with multiple funding rounds. However, angel investors are in abundance for startups in Stockholm. The effect there seems to be evened out as there is no significant relationship with the height of funding. Having been part of an accelerator had a negative effect on the height of funding in the total sample. The relationship is however not significant when split by city. Lastly, raising multiple funding rounds with a VC company involved seems to be the best way to attract the most founding. This especially shows in the sample of Stockholm's startups, where this variable shows the only significant relationship. The effect of having attracted an investor from outside Europe is surprisingly not found for startups in Stockholm. The same applies for having an office abroad in both models.

Figure 28: Regression equation 'height funding' (multiple round variables)		
Variables	Amsterdam	Stockholm
Years in existence (max.)	o	o
Analytics industry	o	o
FinTech industry	o	o
Media industry	o	o
B2B	o	o
B2B and B2C	o	o
Commission revenue	o	o
Freemium revenue	o	o
Subscription revenue	o	o
Office abroad	o	o
Angel (mltpl. rounds)	+	o
Accelerator (mltpl. rounds)	o	o
VC (mltpl. rounds)	+	++
Investor abroad (Europe)	o	o
Investor abroad (outside Europe)	+	o
	n= 132 | p= 0.000 | R-square= 0.379	n= 80 | p= 0.020 | R-square= 0.348

Preliminary conclusions

The results of the linear regression models in combination with the results of the logistic regression analysis allow for dismissing or accepting the hypotheses. The latter however seems to be rare, as there are no straight-up results found. Starting with hypothesis 1; the location of the startup does not seem to determine the height of the funding received. As a result the hypothesis can only be partly confirmed. The age of the startups (H2) does not affect the funding in five out of six models, proving the validity of the sample and thereby accepting the hypothesis. Hypotheses 3 and 4 on the analytics and FinTech industry can be discarded in their entirety, as no effects have been found. The effect of the media industry is ambiguous, but the found relationship in figure 27 shows that the hypothesis should not be completely discarded.

The target groups (H6 and H7) have not proved to be valuable indicators, the hypotheses are therefore dismissed. The results show that the revenue models can help explain which startups receive funding, but that the models do not explain which startups receive more funding. Having an office abroad (H11) proves to have a positive effect on receiving funding and on the height of the funding. The relationship lost significance among startups in Stockholm, which could be due to the limited amount of cases. The same could be said with regards to attracting an investor outside Europe. The variable showed a strong positive effect in figure 27 and 28 and H16 is therefore

accepted. Having a non-domestic investor from within Europe in contrast does not appear to have an effect on the height of funding (discarding H15).

The effect of the investors involved is more ambiguous. Accelerators show on the short term not to have a positive effect on the height of funding, thereby dismissing H13. One third of the startups that have attracted an angel investor also attracted multiple rounds of funding. The effect of having an angel investor on board together with multiple rounds of funding proved to have a positive effect in all models except for the one with solely startups from Stockholm. The latter shows that the effect loses out in places were funding is already plentiful. Hypothesis 13 is therefore not fully confirmed, in contrast with hypothesis 14. The positive effect of attracting VC investors is recognized in all the models except for the first. In the next chapter the results of the regression analyses will be covered more extensively, in order to answer the main research question.

3.7 Bivariate analyses

The research question central to the bivariate analyses is: *what is the role of funding in the internationalization of startups?* The last paragraph found that 'having an office abroad' predicts whether a startup has received funding and how much funding startups receive. However, it could be argued that funding has an effect on internationalization as well.

Below hypotheses will be tested:

H17: Having attracted funding has a positive relationship with having an office abroad. This relationship is expected to be stronger when the startup is in a later investment stage.

H18: Having attracted a foreign investor has a positive relationship with having an office abroad. This relationship is expected to be stronger when the investor is from outside Europe.

H19: Having attracted funding has a positive relationship with having an office outside Europe. This relationship is expected to be stronger when the startup is in a later investment stage.

H20: Having attracted a foreign investor has a positive relationship with having an office outside Europe. This relationship is expected to be stronger when the investor is from outside Europe.

The hypotheses can be tested with bivariate analysis (see 3.1). The contingency tables that test the first hypothesis (figure 29 and 30) confirm the expectations. There appears to be a fairly strong positive relationship between having funding and having an office abroad. The group of startups that does not have funding is virtually the same size as the group that has funding. The share that has an office abroad is however 13% bigger among the second group. The Spearman correlation coefficient in addition shows a positive value. Spearman's rho is a measure that indicates the strength of the relationship between variables that can be ordered (i.e. ordinal, interval/ratio and dichotomous variables; Bryman, 2008b). The investment stages can also be ordered, even when including the undefined category. Startups in the undefined category have not received any funding and the startups in the other categories have received funding in ascending amounts. Using the same measure allows comparing the strength of the relationships, in this case showing that the relationship with the investment stage is stronger.

Figure 29: Contingency table funding * office abroad				
Funding	**No office abroad**	**Office abroad**	*Total*	**n**
No	*97%*	*3%*	*100%*	213
Yes	*84%*	*16%*	*100%*	212
Total	*91%*	*9%*	*100%*	425
p= 0,000		*Spearman's rho: 0,226*		

Figure 30: Contingency table investment stage * office abroad				
Investment stage	No office abroad	Office abroad	Total	n
Undefined	97%	3%	100%	213
Seed	89%	11%	100%	160
Early	72%	28%	100%	39
Expansion	62%	39%	100%	13
Total	91%	9%	100%	425
p= 0,000	Spearman's rho: 0,309			

The second hypothesis concerns the relationship between investors and having an office abroad. Specifically the location of the investors, as it is a proxy for the network position of the startups. Firstly the relationship between having a foreign European investor, and having an office abroad. The statistics again show a positive relationship, although less strong as in the previous tables. The strength of the relationship however increases when investors outside Europe are analysed. This means that another hypothesis is confirmed entirely.

Figure 31: Contingency table foreign investor Europe * office abroad				
Foreign investor Europe	No office abroad	Office abroad	Total	n
No	93%	7%	100%	369
Yes	75%	25%	100%	56
Total	91%	9%	100%	425
p= 0,000	Spearman's rho: 0,208			

Figure 32: Contingency table investor outside Europe * office abroad				
Investor outside Europe	No office abroad	Office abroad	Total	n
No	92,5%	7,5%	100%	399
Yes	61,5%	38,5%	100%	26
Total	91,0%	9,0%	100%	425
p= 0,000	Spearman's rho: 0,254			

It is interesting to see how the relationship alters when only considering international offices outside Europe. The connection between funding and having an office outside Europe is fairly weak. It must be noted however that the amount of startups with an office outside Europe is quite small, which proves to affect the Spearman correlation values. The value of the correlation between investment stage and the office abroad is again higher, thereby confirming another hypothesis.

Figure 33: Contingency table funding * office outside Europe				
Funding	No office outside Europe	Office outside Europe	Total	n
Yes	89%	11%	100%	212
No	98%	2%	100%	213
Total	91%	9%	100%	425
p=0,000	Spearman's rho: 0,171			

Figure 34: Contingency table investment stage * office outside Europe				
Investment stage	No office outside Europe	Office outside Europe	Total	n
Undefined	98%	2%	100%	213
Seed	92%	8%	100%	160
Early	82%	18%	100%	39
Expansion	77%	23%	100%	13
Total	93%	7%	100%	425
p= 0,000	Spearman's rho: 0,204			

The correlation with having an office abroad proved stronger among the funding variables than by the investor variables. The stronger relationships with having an office outside Europe are however found among the investor variables. Having a foreign investor has a stronger relationship with having a 'global office' than the investment stage has. The value of Spearman's rho even increases, although barely, when taking investors outside Europe into account. It shows that 38,5% of the startups that have an investor outside Europe also have an office outside Europe.

Figure 35: Contingency table foreign investor Europe * office outside Europe				
Foreign investor Europe	No office outside Europe	Office outside Europe	Total	n
Yes	73%	27%	100%	26
No	95%	5%	100%	399
Total	93%	7%	100%	425
p= 0,000	Spearman's rho: 0,205			

Figure 36: Contingency table investor outside Europe * office outside Europe				
Investor outside Europe	No office outside Europe	Office outside Europe	Total	n
Yes	61,5%	38,5%	100%	26
No	92,5%	7,5%	100%	399
Total	91,0%	9,0%	100%	425
p= 0,000	Spearman's rho: 0,209			

Preliminary conclusions

All the hypotheses are confirmed, so what does this mean in terms of the research question? The question was: *what is the role of funding in the internationalization of startups?* Firstly, the process of internationalization should be grasped. Different theories recognize different underlying dynamics. The two grand theories considered in this study are the Uppsala internationalization model (U-M) and the Born Global framework. The U-M considers internationalization to be a stepwise process with commitment decisions as milestones. The revised model thereby emphasizes the role of the network position of the company.

Opening an office abroad is considered a commitment decision. The same applies for attra**c**ting an international investor in the network model, bearing in mind that all investors expect compensation. Both have been analysed in tandem, showing that attracting international investors correlates with having an office abroad. This relationship showed to have more importance for having a global office than funding. Interestingly, Johanson and Vahlne (2009) put networks at the centre of their model as a reaction to the critique of the Born Global literature. In other words, the results could be considered a validation of the revised U-M.

Gabrielsson et al (2004) state that Born Global companies differentiate themselves by skipping the international phase. The companies do not test the water in nearby markets, but immediately turn to markets outside their continent. The sample actually shows that 19 of the 28 companies that have an office outside Europe do not have an office in Europe (other than their domestic office). Eight of them however have however attracted a foreign investor. Leaving eleven startups, of which the internationalization of at least two startups can be accounted for by the birth place of the founder (Chile and India) and one by reasons of outsourcing. This leaves only eight 'unexplained' cases in a sample of 425 startups. It must however be noted that the U-M and Born Global framework are not mutually exclusive and these results do not prove whether the framework is valid or not. The U-M however appeared to be better suited in understanding the internationalization of the startups in the study.

The central notion was that, even though startups stand out because of the pace of their development, startups also develop in a step-by-step manner. Correspondingly, internationalization is expected to occur in a later stage of the company's development. The analysis confirms the latter as

the share of startups with international offices increases in subsequent investment stages. Having funding alone also showed a connection with having office abroad. The weak correlation with having an office outside Europe however showed that there are more factors at play. In conclusion; funding plays a conducive role in internationalization. Furthermore, funding helps in recognizing other factors such as the investment stage and the investor network that are beneficial in understanding the complex process of internationalization.

4. Conclusion

This final chapter is organised in three paragraphs. The first paragraph is used to answer the research questions. It will first provide a concise answer on the research question, which will then be elaborated in the following. The elaboration is required, because there are many involved in matter. The last two paragraphs will outline the implications for further research and policy makers.

4.1 Research outcomes

The study had the aim to reach a better understanding of startups and their funding. Amsterdam and Stockholm were compared for this purpose. This allowed for a broader analysis, also including contextual determinants of funding. Attracting funding was seen as an obstacle for startups in Amsterdam, while funding in Stockholm seemingly was in abundance.

To what extent do contextual and firm characteristics determine the funding startups in Amsterdam and Stockholm attract?

The answer to the question is not straightforward; it has many aspects that should be taken in consideration. Firstly the city contexts, without an active capital market for young companies, startups are hampered in their search for funding. Secondly, funding is heterogeneous. An abundance of investors that focus on early stage investments is not necessarily beneficial for startups looking to expand further. Funding for early stage startups is determined by the supply of early stage investors in their region and by distinguishing features of their business model. Funding for expansion stage startups is determined by previous accomplishments and the capital market, which is contingent on the success of prior businesses in the region. The regional constraints can however be diluted when a startup boasts international demand and/or an international network. In this study represented by having an office abroad and having attracted international investors. The investment stage therefore not only determines the type and amount of funding, but also where in the world a startup should be.

City contexts

The first aspect is understanding the context in both cities. There are certain regional characteristics that determine the supply of capital. Government policies were seen as such characteristics. However, Amsterdam scored better than Stockholm on all government indicators and still proved to lack in the supply of startup funding. There could possibly be a time-lag before the results show. For example, the national Startup Delta programme was initiated in 2014 and the StartupAmsterdam

programme as recent as 2015. The case of Stockholm does however show cause-effect relations mentioned in literature. Specifically, the effect of a well-working IPO market. There were substantially more companies that reached an IPO on the Stockholm stock exchange than on the one of Amsterdam. This can be seen as an important incentive for private equity investors (Angels, VC investors and private equity firms).

By only mentioning the IPO market, the main distinctive feature of Stockholm gets overlooked. The city benefits from the many recent success stories that sprung up in the country and in the city in special. Five technology companies reached a billion dollar valuation in the last five years, among which the highest valued European unicorn Spotify (GP Bullhound, 2016). Although the effects have not systematically been measured, it can well be argued that this has resulted in more interest of investors and more startup activity. The sample shows four startups that derived their company name directly from Spotify (Detectify, Lendify, Postify and Securify), suggesting that business were started to try to imitate its success. Furthermore, startups in Stockholm managed to attract more international investors than startups in Amsterdam.

Cities' startup funding

The second part of answering the question was getting a better understanding of startup funding in both cities. There proved to be similarities; both attracted a similar amount of VC investors and a majority of the startups in both cities attracted investors from within the city. However, there were more differences that stood out.

Accelerators

Many of the startups in Amsterdam made use of accelerator programmes. Accelerators are no full-time investors. The programmes target companies in the initial stage of their development. Moreover, evidence on the short term suggests that startups that have been part of an accelerator have lower amounts of funding than other funded startups. The fact that 44% of the funded startups in Amsterdam have been part of an accelerator then shows that the funding market in Amsterdam is still in its infancy.

Angels

The type of investor that is most common among startups in Stockholm is the angel investor. This was against expectation, as angel investors on themselves only focus on the initial stage of a

company's development. Angel investors are however often serial entrepreneurs, meaning that they often had prior successful businesses. Founders of the successful businesses Booking.com and King.com are for example found in the sample of investors. It could then be argued that angel investors are a feedback mechanism of successful entrepreneurship (in Stockholm). The evidence is however circumstantial, it could also be that the difference between the cities is a result of cultural differences.

Venture capitalists

The more substantial differences are found in the locations of the investors and in the focus of the cities' venture capitalist. There appear to be substantially more VC investors in Amsterdam that focus solely on seed investments. In addition, there are more VC investors in the sample from Stockholm that focus on later stage investments. Moreover, startups in Stockholm to a larger extent attract international investors. Among which investors outside Europe, this in the analysis showed to result in higher amounts of funding. All these aspects together show that more funding goes to startups in Stockholm than to those in Amsterdam.

Funding determinants

The before mentioned information is critical in understanding the wider factors that influence funding. However, looking at the startups in particular, there are only a few factors that could be considered determinants of funding.

Location

The location of the startup has been included in the regression analyses as a possible determinant of funding. It showed that startups in Amsterdam are less likely to receive funding. This is probably a result of the (lack of) supply of startup funding. The IPO market and the manifestation of successful companies were seen to cause these differences. The city proved to be no determinant for the height of funding. The reason that the location does show a significant effect in the logistic model is that the underlying factors are not included in that model. The difference in the amount of funding that startups in both cities attract is expected to be a result of differences in attracted investors. The linear model includes these variables and the location variable in turn shows to have an insignificant effect.

Business model

The revenue model of a startup proved to be helpful in explaining whether a startup receives funding or not. The freemium model, which is fairly new, proved to be best in explaining which startups receive funding. The revenue models however did not have an effect amount of funding startups receive. This suggests that the business model of a startup is less decisive for attracting higher amounts of funding. The target group is also part of a business model and also only showed a significant effect in the logistic model. It is assumed that higher amounts of funding are given in later investment stages. Bearing this in mind, it can be argued that business models are more important for early stage investments. Investments in a later stage are more dependent on the proven record of a company, reflected in the variables that do show a significant effect.

Previous accomplishments

The variables indicating that a startup has accomplished something are the investor variables and the variable on the office abroad. Having an office abroad could indicate that the product or service already proved to have sufficient demand in the domestic market. The internationalization variable turned out to be best in predicting whether startups receive funding or not. Because the study is cross sectional rather than longitudinal it is difficult to say whether the funding preceded opening an office abroad or the other way around. It could however be that the investor anticipated on the startup entering the foreign market.

The other variables that indicate a certain accomplishment are the investor variables. Three investor variables were transformed to simulate longitudinal data. The variables indicate that a startup has received multiple rounds of funding, with the mentioned investor type involved in at least one of the rounds. It shows that having been in multiple rounds of funding, with an angel as at least one of the investors, has a positive effect on the amount of funding. Interesting differences are however found between the two cities; the angel variable shows a positive significant effect on the amount of funding for Amsterdam startups and not for startups in Stockholm. The commonality of angel investors in Stockholm possibly makes it less of an accomplishment. Apparently follow-up investors there attach less value to a startup having attracted an angel investor. In Amsterdam it can prove valuable to attract angel investors, given that there is a funding round that follows.

The highest amount of funding is found among the startups that received multiple rounds of funding with at least one VC investor involved. VC investors and the venture capital market prove to be most important for later stage startup funding. Attracting investors from outside the continent also proved to be conducive for the amount of funding. Investors from other continents generally do not take the effort to invest in early stage startups, the positive effect of 'global investors' on the amount of funding of startups is therefore unsurprising.

Internationalization

The empirical chapter included an additional analysis on the role of funding in internationalization. The analysis of internationalization showed that there is a positive relationship between having funding and having an office abroad. This relationship is even stronger in later investment stages. Later stage investments therefore indeed show to be essential for startups that aim for international growth. Another dimension of funding that correlates with internationalization is having a foreign investor. Especially further away investors (outside Europe) seem to be accommodating international growth. The relationship between foreign investor and office abroad appears to be more imperative for opening an office outside Europe. Two centres of investors may be of extra importance here; New York and California. Suggesting that establishing links with those centres could benefit the Amsterdam startup environment.

4.2 Research implications

This research has been novel in combining different strands of literature and different units of analysis, leading to some important insights. On the other hand the study also suffered some limitations. This paragraph will treat both aspects, by doing so, it reflects on the used literature and looks for avenues for future research.

Literature

This study has been novel in adopting an inclusive approach. Studies on startups often have a narrowed view on the companies that excel in growth and apply advanced technologies. More broad selection criteria have been chosen in this study in an attempt to reduce bias. The study could however not escape survivorship bias, because the analysis was not geared towards terminated companies. Studies on investors are often limited to one special type of investors, venture capitalists in particular. This study however chose to include a wide array of investors with one common denominator, they all invested in startups. Combining both inclusive approaches resulted in a comprehensive analysis of how the two groups behave in tandem.

Looking back on the literature in the theoretical framework, the studies of Marmer et al (2012a; 2012b) proved helpful in understanding the startup phenomenon. The authors did well in defining startups, emphasizing the importance of development stages and business models. Although the studies mainly had their foundations in empirics, they did build on principles in the literature of company life cycles. The authors furthermore did well in translating influential 'popular' views on startups to more substantiated concepts. The theoretical foundations of the principles of Marmer et al (2012) could however be substantiated more in the future. In the analysis, certain features of the startup business model (industry, target group and revenue model) were treated separately. The features did however not tell much separately. Combining the features to construct certain business models, following Marmer et al (2012a) and Hellmann and Puri (2000), could be helpful in better understanding startups and their different development trajectories.

Literature on internationalization was also covered in the study. The Born Global framework is used in understanding the dynamics of rapid internationalization. The literature however shows many shortfalls. The studies on Born Globals have been very inconsistent in defining Born Global companies. The definitions extend so far that some studies see a timespan of fifteen years, in which a

company enters an international market, as rapid internationalization (Dib et al, 2010). The Born Global phenomenon refers to companies that internationalize faster, this however does not necessarily mean that the process of internationalization is different. This is also argued by Johanson and Vahlne (2009), their model was used for understanding the internationalization of startups in the study. It showed that, although the startups internationalize relatively fast, the process of internationalization is nonetheless an incremental process. This proves that the more traditional Uppsala internationalization model is still helpful in understanding the internationalization process of most, if not all, companies.

Research design

In the study a startup was considered to progress through different development stages. As a consequence, startups would distinguish themselves by their development stage rather than their time in existence. The study provided evidence on the latter, since the differences in funding were not a result of the differences in age of the startups. The study however also has limitations because of this aspect. The data of the study was cross-sectional, rather than longitudinal. Because the data only shows one observation, it is hard to distinguish in which development stage startups find themselves. Furthermore, it is difficult to tell which events supersede or precede each other. The study however provides many leads for future (longitudinal) studies.

The findings of the analysis questioned assumptions about the effect of government policies on fast growing startups and the market of startup funding. The supportive institutional environment for startups in Amsterdam has not yet shown to have an effect on the latter. Following studies can determine whether this effect eventually will show or that the effect of the government is indeed negligible. The case of Stockholm can be helpful in understanding the evolutionary development of a 'startup city'. The role of angel investors herein deserves special attention. This study interprets the abundance of angel investors in a region as a result of previous success. Future studies could test this self-reinforcing mechanism by revealing whether angel investors are indeed people that have previously started successful business in the same region. Longitudinal studies in particular could also establish whether the amount of angel investors runs parallel with the ups and downs in an industry.

The two cases of the study are both capitals of European countries with just under a million inhabitants. The cities are thus well comparable, but to what extent are the findings applicable for other environments? It is commonly understood that young technology companies gravitate towards urban areas. Since both cities are the most urbanized in their respective countries, the cities logically host more startups than other places in the country. The financial environment is however not necessarily different for these startups, the majority of funding is bound to national boundaries rather than city boundaries. It could however also be argued that startups in the cities are better connected. Attracting funding might be less of a challenge in larger cities, as those cities generally have bigger capital markets and correspondingly more supply of startup funding. New York and London are two prime examples in this respect, much of the 'international funding' of startups in both Amsterdam and Stockholm originated from these centres of startup funding.

4.3 Policy implications

This paragraph aims to find aspects for improvement in the Amsterdam environment. In other words, what are the implications of this study for policymakers in Amsterdam and the Netherlands?

First of all, the Amsterdam municipality recognized the problem that many startups in the city fail to achieve substantial and international growth and that the lack of funding is the culprit. One could say that acknowledging the problem is the first step in solving the problem. The literature stipulated that national policies that stimulate entrepreneurship are reflected in the supply of funding. The available data showed however that the government policies in the Netherlands are more conducive than the policies in Sweden, while Stockholm has a larger supply of funding. Then what was the recipe for funding in Stockholm? The difference in funding can be attributed to the difference in the IPO market. It is however hard for the government to interfere in these markets. The data also suggests that the emergence of multiple successful technology companies led to more investments in startups from Stockholm. This suggests that the goal of the Amsterdam municipality is also the solution for the problem.

Looking at the determining factors from a startup perspective, it showed that attracting certain types of investors is beneficial for the height of funding. Venture capitalists, 'global investors' and potentially angel investors. Venture capitalists, and especially those that target later investment stages, can be incentivised by again the IPO market conditions. Venture capital has also been called risk capital, since investing in companies with an uncertain future also brings uncertainty for the investor. Creating more awareness of and more engagement with the startups in a city could potentially help decrease the perceived risk. The action programme StartupAmsterdam with thus purpose initiated the annual Capital Week, a series of events that are aimed to connect startups and (potential) investors (StartupAmsterdam, 2015). Generating engagement of investors does not necessarily fit within the tasks of the municipality. However, engagement is an important aspect, especially for angel investors that put their own capital at risk.

Besides nurturing the local conditions, it is also important for the governmental agents to establish links with outside centres of capital. Attracting investors from outside the continent proved to be positive for the amount of funding received. For startups in Amsterdam, investments from outside the continent where predominantly originated from California. The same applied for startups in

Stockholm, although New York also proved to be a centre of investment. The prime minister of the Netherlands recently visited Silicon Valley, together with the envoy of the national Startup Delta programme, symbolizing renewed collaboration (Rijksoverheid, 2016). This can be considered positive, as American investors were included in the programme. StartupAmsterdam chose a less formal approach in setting up exchange programmes for startups in Amsterdam and New York (StartupAmsterdam, 2016b; 2016c). These programmes score arguably better in engagement by including actual startups and could potentially help establishing valuable links. Time will tell, however, if the coordinated efforts result in success stories. Successful companies in the end determine the success of a startup region.

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