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## Abstract

In this paper we show that a culture of independent entrepreneurship and a culture of ambitious entrepreneurship are two distinct dimensions of culture in entrepreneurial ecosystems, and are differently related to Venture Capital, growth-oriented entrepreneurship and the prevalence of unicorns in a country. We map the different types of entrepreneurship around the globe, and show the extreme spatial unevenness of entrepreneurial outputs of entrepreneurial ecosystems. We analyze the unicorn production chain from Total Entrepreneurial Activity, to growth-oriented entrepreneurship, and unicorns, and how this connects to culture and capital.

**Keywords:** entrepreneurial ecosystem; entrepreneurship; growth-oriented entrepreneurship ; scale-ups ; unicorns ; venture capital ; culture ; ambition

**JEL classification:** D2, L26, M13, O43, P00, R1, R58

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# A Culture of Ambitious Entrepreneurship

## 1. Introduction

Entrepreneurship comes in many shapes and forms, and not all of them are equally relevant for long term economic development. Entrepreneurship with the ambition to create large scale value creation is essential (Stam et al. 2012). This can be with creative destruction, the process by which valuable new goods, services and methods continually displace less valuable old ones (Schumpeter 1942). Examples are AirBnB and Skype that made redundant part of the hotel business and landline telephony with their new products. Sometimes valuable new goods, services and methods are developed in domains in which nothing was available, for example with new learning methods for underserved groups and new medicines for new illnesses. Examples are Guild Education that provides a learning platform to bring together learning providers and employers and BioNTech (founded in 2008, IPO in 2019) that developed one of the COVID-19 vaccines, with Pfizer. This might be called creative construction (Agarwal & Audretsch 2020).

These processes do not come about automatically. Many attempts to renew the economy in a valuable way fail, and only few of these attempts deliver new value on a large scale. But without these, we would still be in the stone age. These processes do also not emerge in a vacuum: they depend on a large set of interdependent set of actors and factors in particular territories, so-called entrepreneurial ecosystems. In this paper we focus on one factor of the entrepreneurial ecosystem, namely a culture of ambitious entrepreneurship, identified as one of the bottlenecks of the ecosystem for scale-ups in the Netherlands (Stam 2013). We aim to improve insight into the role of culture in scale-up ecosystems. We measure a culture of ambitious entrepreneurship with the degree to which successful entrepreneurship is valued in society, and relate this to measures of venture capital and different measures of entrepreneurial output (including total entrepreneurial activity, growth-oriented entrepreneurship, and the prevalence of unicorns).

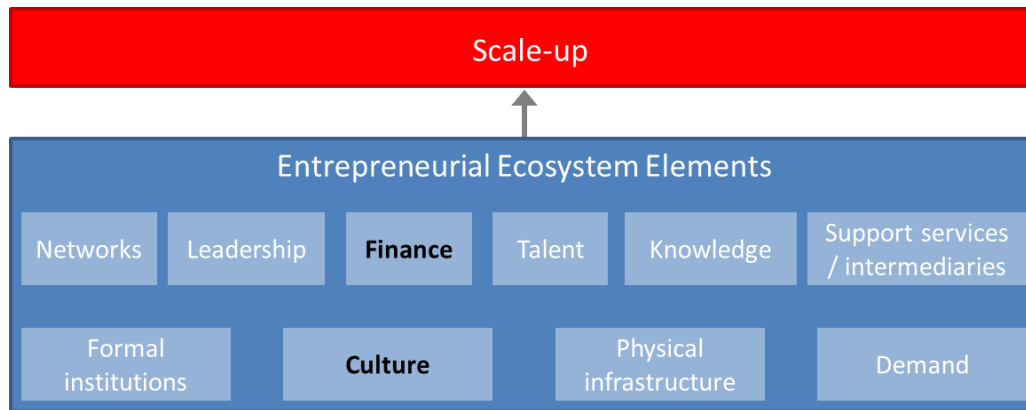
An elite set of new independent firms that have grown rapidly and have reached a valuation of at least \$1 billion are so-called unicorn firms. Global examples are AirBnB, BioNTech, and Guild Education. Examples of Unicorns in the Netherlands are Acerta Pharma (unicorn in 2015; acquired by AstraZeneca in 2016), Adyen (unicorn in 2014; IPO in 2018) and Mollie (unicorn 2020). Sometimes firms that reach the \$1 billion value mark due to an IPO or acquisition are mistaken for a unicorn: they are not privately held independent firms anymore (e.g. Booking - acquired by Priceline; Skype – acquired by Microsoft). We use the prevalence of unicorns as an indicator of entrepreneurship, in particular of large scale value creation. We are aware that reaching the \$1 billion value mark only reflects financial value, but we also take this as a promise of realizing large scale value creation in the economy at large.

We analyze the (spatially uneven) emergence of unicorns around the world with a simple three step empirical procedure: from (I) total entrepreneurial activity, to (II) total growth-oriented entrepreneurial activity, to the (III) prevalence of unicorns. We assume that for unicorns to exist, there must be growth-oriented entrepreneurial activity, and for growth-oriented entrepreneurial activity there must be entrepreneurial activity. These are necessary, but not sufficient conditions.

We first describe the prevalence of unicorns around the globe, total growth-oriented entrepreneurial activity, and total entrepreneurial activity (TEA). Second, we compute the conversion rates from (I) total entrepreneurial activity to (II) total growth-oriented entrepreneurial activity, and from (II) total growth-oriented entrepreneurial activity to the (III) prevalence of unicorns. These conversion rates provide insight into the “efficiency” with which unicorns are

“produced”, and the part of the unicorn “production chain” that seems to be constrained the most in a particular country.

We relate the prevalence of these types of entrepreneurship and the conversion rates to two important elements of scale-up ecosystems: a culture of ambitious entrepreneurship and the prevalence of venture capital.



**Figure 1.** Scale-up Ecosystem

We compare the Netherlands with aspiring benchmarks including Sweden, Switzerland, Israel, Estonia and the UK. In addition we compare the Netherlands with other large scale-up ecosystems including the US, China and India and other European countries including France, Germany and Italy. We summarize the findings for these comparison countries in table 1. This table includes variables for our key concepts of culture (a high status of successful entrepreneurship in society; source: Global Entrepreneurship Monitor (<https://www.gemconsortium.org/>)), capital (prevalence of venture capital investments; source: Dealroom (<https://dealroom.co/>)), and entrepreneurship (Total Entrepreneurship Activity, and high-growth oriented entrepreneurship; source: Global Entrepreneurship Monitor; and the prevalence of unicorns; source CB Insights (<https://www.cbinsights.com/>)).

Table 1 shows a clear distinction between countries that have higher entrepreneurial outputs (especially unicorns), higher levels of venture capital and a higher status of successful entrepreneurship (Estonia, Israel, Sweden, Switzerland, UK, and US). China still has a lower prevalence of unicorns, but that would be different if we would just focus on a few regions (comparable in size to the Netherlands), like Beijing, Shanghai, Shenzhen (the home region of Tencent) and Zhejiang (the home region of Alibaba). France is comparable to the Netherlands in many dimensions, and Germany is also comparable, but has a higher share of population that perceives a high status of successful entrepreneurship and a higher prevalence of unicorns. Italy and India often have substantially lower numbers, especially with respect to entrepreneurial outputs.

**Table 1.** Unicorns, Venture Capital, Culture and Total Entrepreneurial Activity in the set of comparison countries

Country:	Unicorn avg 2019-2021 Per 10 million inhabitants	VC € per capita avg 2016-2018	High status successful entrepreneurs	High-growth per 100 adults avg 2014-2016	TEA per 100 adults avg 2014-2016
Israel	8.5	308	73.2	1.7	11.6
Estonia	7.5	74	-	1.2	12.9
United States	6.6	2723	75.9	2.5	12.8
Switzerland	4.6	175.5	76.4	0.7	7.5
Sweden	3.3	119.6	71.6	0.6	7.1
United Kingdom	3.3	124.6	76.7	1	8.8
Germany	1.2	38.7	77.1	0.6	4.8
<b>Netherlands</b>	<b>1</b>	<b>47.3</b>	<b>68.6</b>	<b>0.6</b>	<b>9.2</b>
China	0.9	399	76.9	2.3	12.9
France	0.9	45.4	67.9	0.6	5.3
India	0.2	57	-	0.2	9.3
Italy	0	7	69.3	0.2	4.6

Green >= 100% NL; Orange = 50-100% NL; Red <50%

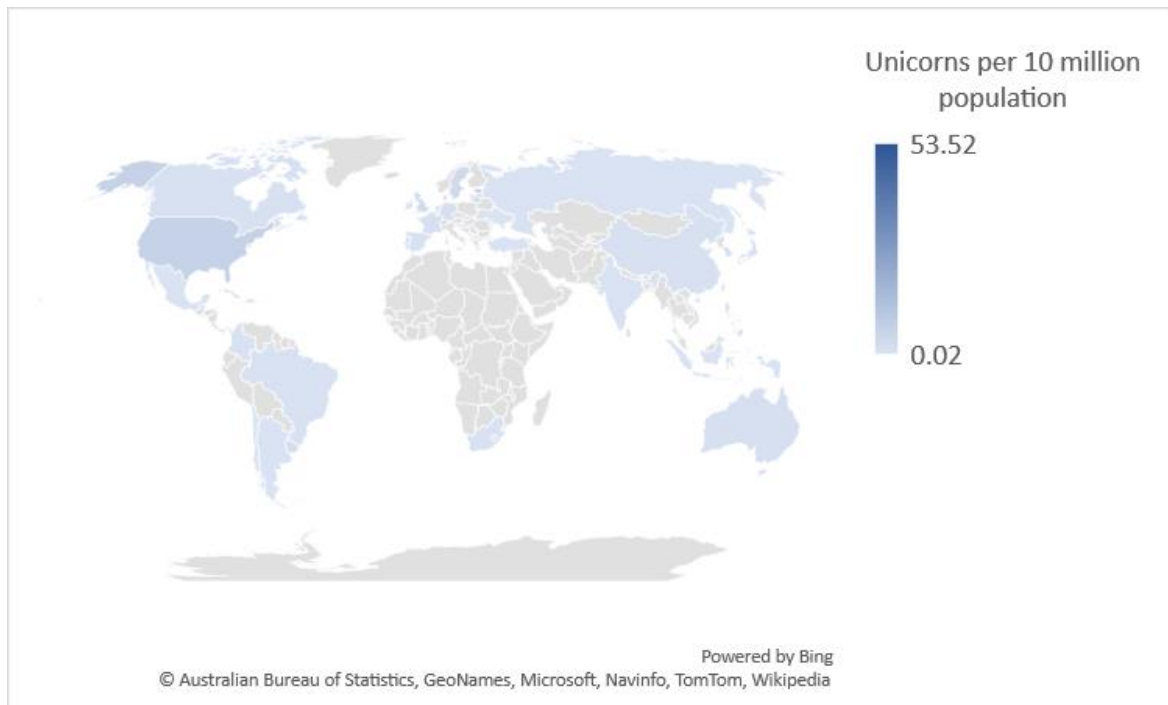
This benchmark table shows that countries that have a substantial higher prevalence of unicorns than the Netherlands, also tend to have higher levels of venture capital, a higher share of population that perceives a high status of successful entrepreneurship, and higher rates of high-growth oriented entrepreneurship. A higher TEA does not seem to be condition for increasing the prevalence of unicorns, with countries like Sweden, Switzerland and the UK having lower TEA rates than the Netherlands.

## 2. The prevalence of entrepreneurial activity, growth-oriented entrepreneurial activity and unicorns around the globe

For understanding the unicorn production chain we first describe the prevalence of entrepreneurial activity, growth-oriented entrepreneurial activity and unicorns around the globe. We use data from CB Insight to trace the prevalence of unicorns in the period 2019-2021, and the Global Entrepreneurship Monitor database to trace entrepreneurial activity in the preceding 5 years (2014-2016) in which these unicorns could have been established. To control for population size we use demographic data from the United Nations. Our overall database covers 119 countries.

### 2.1 Unicorns

There is a wide variety in the prevalence of entrepreneurial activity, growth-oriented entrepreneurial activity and unicorns around the globe. The unicorn country average (over 119 countries) is 1.2, meaning about 1 unicorn per 10 million inhabitants, while the mean is 0. The unicorn game is extremely skewed: only 38 out of 195 countries around the globe have had at least one unicorn in the period 2019-2021.

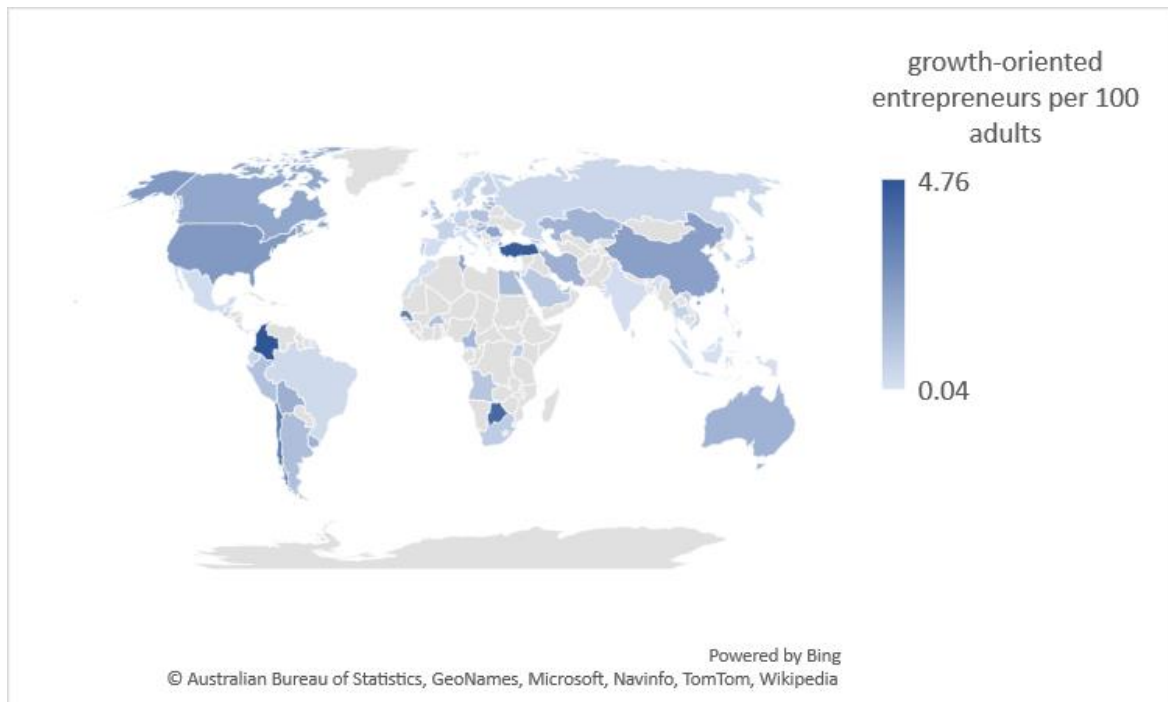


**Figure 2.** Prevalence of unicorns around the globe, per 10 million inhabitants (2019-2021; grey areas indicating 0 unicorns)

The (average) prevalence of unicorns per 10 million inhabitants in these 38 countries rises from between 0 and 1 in most of the countries, to very large numbers in a few small countries like Bermuda (53.5), Luxembourg (21.8), and Estonia (7.5), and Lithuania (3.7), and high numbers in Israel (8.5), the US (6.6), Hong Kong (5.8), Singapore (5.7), Switzerland (4.6), Sweden and the United Kingdom (both 3.3). The Netherlands is part of the league of countries with unicorns, and with 0.97 unicorns per 10 million inhabitants it performs average within this league. The world map of unicorns (Figure 2) shows that a large number of countries has seen some unicorn activity in the period 2019-2021. Only the African continent seems to have very few unicorn countries. Grey countries have zero unicorns.

## 2.2 Growth-oriented entrepreneurial activity

Growth of startups hardly happens by accident: having the ambition to grow is close to a necessary condition for realizing growth (Stam et al 2012). However, most of the startups that aspire to grow do not realize this growth: many feel called, but few are chosen. What is the prevalence of growth-oriented entrepreneurial activity around the globe? We measure this with the share of the adult population that is currently setting up a new business, or owns a new business of at maximum 42 months old, and expects this business to grow to a size of at least 20 employees. We take the average of the annual values in the period 2014-2016. The average prevalence of growth-oriented entrepreneurial activity in the 87 countries in which this is measured, is 1.1 (per 100 adults). With an average adult population of 65%, this means that per 1.2 unicorns per 10 million inhabitants, there are about 71,500 growth-oriented entrepreneurs: based on these numbers, one can guesstimate that it takes about 60 thousand growth-oriented entrepreneurs to create one unicorn.



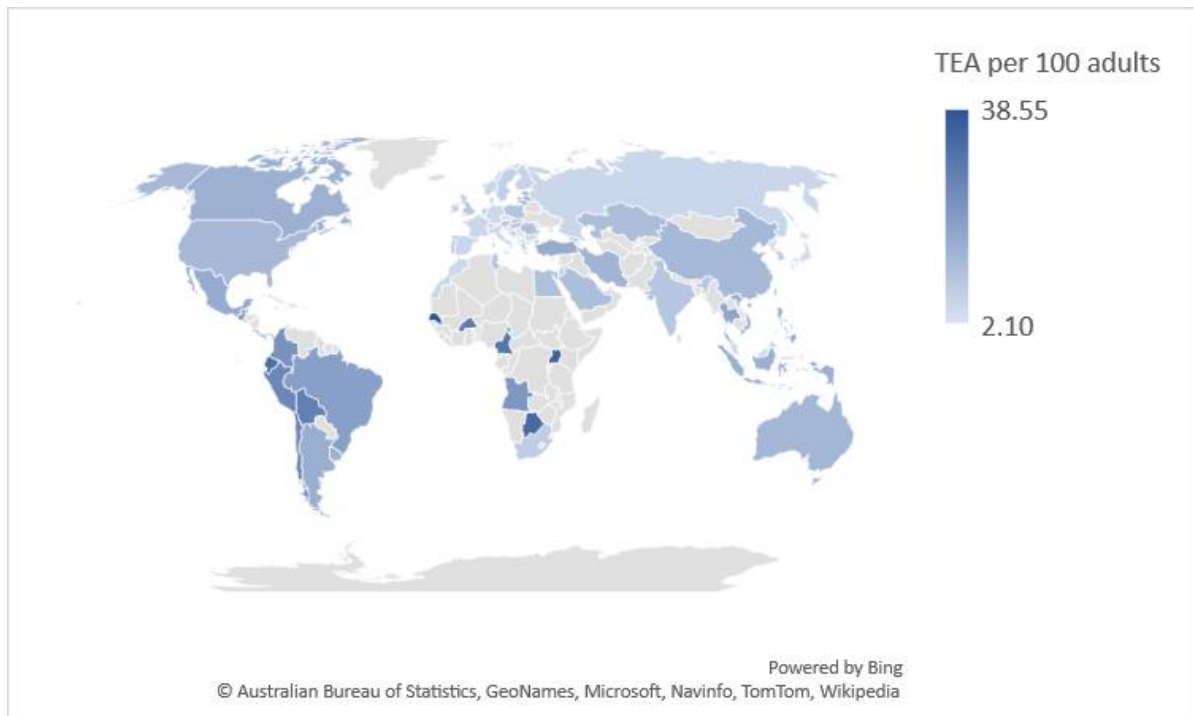
**Figure 3.** Prevalence of growth-oriented entrepreneurship (2014-2016; grey areas indicating missing data)

In most countries, the prevalence of this growth-oriented entrepreneurial activity is very low, ranging between 0 (lowest in Indonesia: 0.1) to 1, with (positive) outliers in Colombia (4.8), Turkey (4.5), Botswana (4.1), Chile (3.6), Qatar (3.4), Senegal (3.3), United States (2.5), China (2.26), Singapore (2.1), and Tunisia (2.1). There are more countries with high-growth oriented entrepreneurship than unicorns, with more countries in Latin America and Africa with relatively high scores (see Figure 3).

### 2.3 Total entrepreneurial activity

Entrepreneurship may happen by accident, but it still requires action to turn a perception of opportunity or necessity into a new business. This action is measured with the so-called total entrepreneurial activity (TEA) rate of the Global Entrepreneurship Monitor. This TEA rate has an average of 12.9 over 87 countries, and ranges from 3.8 in Japan to 35.5 in Uganda (1:9). So even though it is highly unevenly distributed over space, it is more evenly spread than growth-oriented entrepreneurship (1:48) and unicorns (with most countries having 0 unicorns in the period studied). In other words: the more successful type of entrepreneurship the more unevenly spread it is around the globe.





**Figure 4.** Prevalence of TEA (2014-2016; grey areas indicating missing data)

### 3. Conversion rates along the unicorn production chain

#### 3.1 TEA to growth-oriented entrepreneurship

The first part of the unicorn production chain is the growth-oriented share of TEA. On average 8.7% of TEA in our sample concerns growth-oriented entrepreneurship: i.e. about 1 in 11 adults that are engaged in setting up a new business (TEA) does this with the ambition to grow a substantial business (at least 20 employees). This ranges from a low 0.9% and 1.0% in respectively Indonesia and Malaysia, and high 28.1%, 27.9% and 26.3% in respectively Turkey, Qatar, and the United Arab Emirates. So this first conversion rate also shows a high spatial variation (1:31). Even though TEA is a necessary condition for high-growth oriented entrepreneurship, our empirical analysis indicates there is no constant conversion rate of TEA to high-growth oriented entrepreneurship. National conditions are likely to influence not only the prevalence of TEA but also the conversion rate to high-growth oriented entrepreneurship. In other words, an increase in TEA does not automatically increase the probability of high-growth oriented entrepreneurship. This is also in line with the analysis of the benchmark countries (table 1) which revealed that countries with lower TEA rates than the Netherlands still had higher rates of growth oriented entrepreneurship and unicorns.

#### 3.2 Growth-oriented entrepreneurship to unicorn

The second part of the unicorn production chain is the conversion of growth-oriented entrepreneurship into unicorns. For this we can only analyze the sample of (38) countries which have had at least one unicorn in the period 2019-2021. We compute the conversion rates with dividing the prevalence of unicorns per 10 million inhabitants by the prevalence of growth-oriented entrepreneurship per 100 inhabitants. This conversion rate ranges from 0 for all countries without unicorns, to a low 0.009 (Turkey) and 0.05 (Chile, Russia), to high 50.7 (Luxembourg), 6.5 (Switzerland), 6.2 (Estonia), 5.9 (Sweden), and 5.1 (Israel). When countries with zero unicorns are excluded, this first conversion rate still shows an extremely high spatial variation (1:5633). Even though high-growth oriented entrepreneurship is a necessary condition for unicorns to emerge, our

empirical analysis indicates there is no constant conversion rate of high-growth oriented entrepreneurship to unicorns. National conditions are likely to influence not only the prevalence of high-growth oriented entrepreneurship but also the conversion rate to unicorns. In other words, an increase in high-growth oriented entrepreneurship does not automatically increase the probability of unicorns to emerge.

### **3.3 Countries along the unicorn production chain**

What do these conversion rates tell us about the ability of countries to produce unicorns? First, that some countries, including Turkey, Qatar, and the United Arab Emirates, have a very high share of the entrepreneurial population that is also ambitious with respect to the future size of their new business. Second, it is extremely rare that high-growth oriented entrepreneurship is turned into a unicorn, and this process is enormously spatially uneven. Third, the countries in which relatively many growth-oriented entrepreneurs are able to create a unicorn are Luxembourg, Switzerland, Estonia, Sweden, and Israel. This list is partly the result of the size of geographical units: it is likely that regions like California (US), Bangalore-Karnataka (India), and Zhejiang (China) would rank highly if they were countries (cf. Leendertse et al. 2021, analyzing European regions). Even though there is hardly any correlation between the three different types of entrepreneurship along the unicorn production chain, there are a few countries that have high rates of the high-growth oriented entrepreneurship and unicorns (but not TEA!), including the United States, Singapore and China.

## **4. Understanding the role of culture and venture capital enabling growth-oriented entrepreneurship and unicorns**

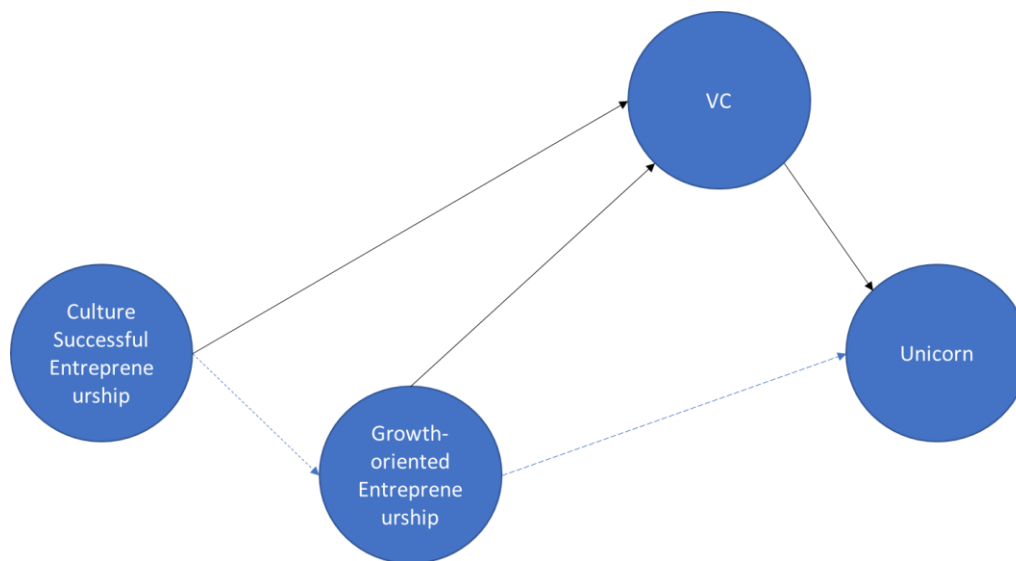
### **4.1 Culture in scale-up ecosystems**

What is the role of culture in scale-up ecosystems? We have measured a culture of ambitious entrepreneurship with the degree to which successful entrepreneurship is valued in society, and have related this to measures of venture capital and different measures of entrepreneurial output (including total entrepreneurial activity, growth-oriented entrepreneurship, and the prevalence of unicorns).

Our analyses show that countries with high entrepreneurial outputs (especially unicorns), tend to have high levels of venture capital and a high status of successful entrepreneurship (for example Estonia, Israel, Sweden, Switzerland, UK, and US). Countries that have a substantial higher prevalence of unicorns than the Netherlands, also tend to have higher rates of high-growth oriented entrepreneurship, and higher levels of venture capital and a higher share of population that perceives a high status of successful entrepreneurship. A higher TEA does not seem to be condition for increasing the prevalence of unicorns, with countries like Sweden, Switzerland and the UK having lower TEA rates than the Netherlands.

The correlation analyses of the unicorn production chain and of culture and capital with entrepreneurial outputs reveal that even though many elements and early stage entrepreneurial activity are necessary conditions, but far from sufficient. The analyses suggest a strong relation between a culture of successful entrepreneurship, the prevalence of venture capital and subsequently unicorns. Perhaps surprisingly there does not seem to be a strong relation between a culture of successful entrepreneurship and the prevalence of growth-oriented entrepreneurship, and also no strong relation between the prevalence of growth-oriented entrepreneurship and the prevalence of unicorns. The only strong relation we could find is between growth-oriented entrepreneurship and the levels of venture capital. This relation could be a reflection of several mechanisms: the investment readiness (or willingness) of a relatively large group of startups (a high

demand for venture capital), but also a high level of serial entrepreneurs (not necessarily unicorn founders) that reinvest their wealth as venture capitalists.



**Figure 5.** Correlational analyses of key variables

#### 4.2 Diagnosis of the Netherlands scale-up ecosystem

What could this mean for the Netherlands? First of all that both the culture and capital elements seem to be weak in the national scale-up ecosystem, in comparison to relevant benchmark countries.

##### **Culture**

A focus on total entrepreneurial activity might be misleading here: the Netherlands performs relatively well on this entrepreneurial output indicator. Total entrepreneurial activity in the Netherlands disproportionally involves solo self-employed, which is enabled by a culture favoring self-employment as an occupation, labor market regulations discouraging contracting employees for smaller firms, and taxation schemes favoring self-employed (Stam 2013; OECD 2019). So both culture and formal institutions seem to constrain the appetite and incentives for scale-ups in the Netherlands.

##### **Venture capital**

In comparison to the benchmark countries, levels of venture capital are also relatively low in the Netherlands. There is no simple, unidirectional causal connection between venture capital and the prevalence of unicorns. On the one hand, a well-developed venture capital industry is a necessary condition for unicorns to emerge: venture capital not only enables the growth of startups, venture capital rounds are also necessary for estimating the value of startups, and to qualify them as unicorns. A well-developed venture capital industry may also attract startups and scale-ups from abroad. On the other hand, a large amount of potentially successful scale-ups might also attract venture capital (the number of investment ready startups determining the demand for venture capital), and successful serial entrepreneurs (and employee-owners of successfully exited scale-ups) may become venture capitalists (cf. Mason & Harrison 2006). In addition to these feedback effects, there are also interdependencies in the scale-up system, including the constraining effects of culture and institutions (Wurth et al. 2021).

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