Comparing Start-up Propensities and Entrepreneurship Characteristics of Students in Switzerland and Germany

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Abstract: This paper emerges from the international empirical research project "Foundation and Entrepreneurship of Students" (GESt-study) that aims to analyse target group-differentiated start-up propensities and entrepreneurship characteristics of students in diverse countries to derive demand-oriented recommended actions for an appropriate conceptualization of entrepreneurship education and support. It compares start-up ambitions and entrepreneurial criteria of students in Switzerland and Germany within the pre-start-up process. Because of the subject- and process-oriented nature of the analysis, students' requirements can be analysed target group-differentiated. The results of this country comparison illustrate that, despite similar student properties in both countries like average age or form and duration of the study, students in Germany show higher start-up propensities and usually deal more strongly with entrepreneurship than the students surveyed in Switzerland. This is an interesting result, considering the findings of other studies like the GEM-Project which constrains that the total early-stage entrepreneurial activity (TEA) in Switzerland is higher than in Germany, albeit below the average of all innovation-driven economies. One reason for this result might be the higher risk aversion of students in Switzerland. Especially female students in Switzerland are much more risk-

averse than their male counterparts. About 65 % of the female students in Switzerland are not willing to take risks, compared to 40 % of male students in this category. There is in fact also a gap between male and female students in Germany, but the gap is not as obvious as in Switzerland. Further findings show that students in Switzerland rate the importance of motives in the context of entrepreneurship slightly higher than students in Germany. The students of both surveys estimate the highest difficulties in the lack of equity, finding the right business idea and one's own financial risk. The lowest barrier is the support of friends and family in both countries. All the surveyed students have confidence in the support of their private environment during a possible start-up. Altogether, both student groups must be accompanied during their whole studies, but especially female students need stronger support in both countries. In the survey of Switzerland the difference between male and female students relating to entrepreneurship propensities is much more obvious than in the German survey, however in both countries the female students are clearly under-represented in progress of entrepreneurial activity. Furthermore the students need to get basic start-up knowledge according to their specific needs to increase the foundationrate in both countries; this will help reduce the existing barriers and prejudices which are in conflict with starting a new venture. Encouragement of this specific group of persons will help to increase the quantity of new and promising companies, an effect which is absolutely necessary to maintain the competitiveness of both economies in the future.

1 Introduction

Entrepreneurship is considered nowadays as the engine of the economy and responsible for growth, wealth and progress in a country. Especially the reduction of unemployment is linked with new and fast growing ventures. The meaning of Entrepreneurship has also changed. In the past decades, large enterprises were relevantly responsible for progress and innovation, because of the availability of capital and resources (Schumpeter 1934; Acs/Audretsch 2010). Since the beginning of the 21th century, and especially since the emergence of many new ventures which have revolutionised current market forces linked with the term "Neuer Markt" ¹ and in political context especially since the Lisbon Agenda 2000, Entrepreneurship has received new political and social acceptance because of new ventures which create new products or provide services especially by settling in market (Scarborough/Norman 2012; niches Ruda/Martin/Ascúa/Gerstlberger/Danko 2013).

Therefore, it is the person of the entrepreneur who is significantly involved in the process of invention and innovation and the driving force in all steps of founding (Ripsas 2004; Fueglistaller/Müller/Wüller/Volery 2012). Here, a paradigm change can be observed. Nowadays, Entrepreneurship and the necessary skills are

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German for 'New Market' - a segment of the German stock exchange that included New Economy companies.

regarded as largely teachable in literature (Uebelacker 2005; Cesinger/Müller 2009; U.S. Department of Commerce 2013). In the past decades the opposite was assumed. The competence to be an entrepreneur was seen as inherent. Either a person was an entrepreneur or not. Especially the takeover of a firm through the eldest son was common and so there was no need for teaching Entrepreneurship. Also because of changes in this point of view, teaching of Entrepreneurship is nowadays an emerging branch of research (Blum/Leibbrand 2001; Uebelacker 2005; Walter/Walter 2008; Graef 2009).

The results and findings of these researches are useful to raise entrepreneurial activities in a country. The Global Entrepreneurship Monitor Project for example obtains its findings from the target group of people between 18 and 65 years. The focus of the GESt-Study lies on students as potential entrepreneurs. In addition to a considerably younger target group, this group shows remarkable entrepreneurial potential (Brixy/Sternberg/Vorderwülbecke 2012; Baldegger/Brülhart/Andreas/Alberton/Hacklin 2012, Ruda/Martin/Ascúa/Danko 2008).

A further point arising apart from the question of a difference in entrepreneurial topics and characteristics between all persons in working age and students is the relevance of gender aspects and therefore the difference between male and female students as potential entrepreneurs. Beside the biological gender, here the social-cultural gender is mainly in focus, especially because of self-reproducing norms and values through acquired roles which are concordant to social needs. In literature, the branch of gender-research, which demonstrates the existence of a gender-gap in different topics, has also illustrated the existence of an entrepreneurial gender-gap (Fossen 2009; Gorji 2011; Kariv 2013).

The main differences between both genders from a micro- and macro-specific perspective are the clearly visible higher entrepreneurial activity (nearly 50 percent higher with male persons). In addition, women tend to have lower start-up capital, prefer founding in existing markets and use existing technologies. Women favour costumer-orientated business and have a higher percentage in necessitydriven ventures. But there are also commonalities; despite higher necessity-driven ventures by female entrepreneurs, opportunity-driven ventures take the biggest part in both groups and both genders use social networks. There is a nearly similar orientation on role models and both genders prefer starting a business alongside a job. Despite the commonalities and the stronger activity of female persons in the past few years, entrepreneurship is mainly linked with male persons (Kariv 2013; Cesinger/Müller 2009; Baldegger/Brülhart/Alberton/Hacklin 2012; Kelley/Brush/Green/Litovsky 2012).

Therefore, this paper aims to compare gender-specific start-up propensities and entrepreneurship characteristics in Switzerland and Germany regarding the student

target group. A further aim is to derive recommendations for universities to improve start-up activity of students.

According to the Global Entrepreneurship Monitor (GEM), both countries, Switzerland and Germany, show a low Total Early-Stage Entrepreneurial Activity (TEA), in Switzerland, with 5.98 percent, slightly higher than in Germany (5.34 %). Despite differences in region and population, both countries are relatively closely together but Switzerland is at a higher level than Germany in every aspect, especially with regard to the ranking of GDP per Capita, unemployment and inflation rate. All in all, both countries show good figures. Also the Global Competitiveness Report rates both economies among the top 5 out of 148 analysed economies. Switzerland shows the highest rate (rank 1) and Germany ranks 4 (Schwab/Sala-i-Martin 2013; Brixy/Sternberg/Vorderwülbecke Baldegger/Brülhart/Andreas/Alberton/Hacklin 2012; The World Factbook/CIA 2014). Also the experts of both countries attest good infrastructural conditions in comparison to other innovation-driven economies. Public aid programs, financing aspects, protection of intellectual property rights and regulation and taxes are the best rated points in Germany. In none of the points is Switzerland significantly worse than Germany. Altogether, both countries are well-developed and must be regarded normally as suited to establish new ventures (Brixy/Sternberg/Vorderwülbecke 2012).

2 Research Design

In order to analyse student start-up propensities in the narrower sense, the foundation ambition type model has been applied. This model is based on a literature review from which a theoretical reference framework of students' start-up propensities was derived. Foundation ambition types are categorized as follows: The foundation-laymen has not dealt with foundation at all; the foundation-sensitized type has not yet considered foundation; the foundation-interested type has already considered foundation but has not yet started to prepare a foundation; the foundation-preparer is already engaged in the preliminary foundation and the founder has already founded a new company (Ruda/Martin/Danko/Kurczewska 2012).

This process-oriented model illustrates the in course of time potentially emerging start-up intention and allows to differentiate in these specific target groups to guarantee adequate analysis of structurally and situationally influencing factors on the potential start-up propensities arising within the start-up process.(Ruda/Martin/Danko 2010).

Based on these findings, a standardized questionnaire was developed to survey students during their courses. On the one hand this procedure counteracts the weakness of internet-based questioning and on the other hand the self-section effects. Hence, more realistic results are generated which derive from undergraduate as well as postgraduate students with several years of work, leader-ship and start-up propensity (Ruda/Martin/Danko 2010).

The results of this article rest upon an extract of a large-scale survey in Germany initiated in 2007, here isolated on the years between 2010 and 2012 for a better comparability, and a survey in Switzerland in 2012. In this context, nearly 1,600 students in Germany and 307 students in Switzerland were questioned especially in the study fields Business Administration (32.9 %), Engineering (44.6 %) and Informatics (12.3 %), the particular areas with the highest entrepreneurial activity. From the above, the following hypotheses (H) are deduced:

Country-specific cross-gender hypotheses:

- H1: The age distribution in both countries does not deviate significantly.
- H2: The quantity of passed terms from students in Germany and Switzerland is similar.
- H3: Students in the Swiss sample are more risk-averse than in the German.
- H8: The percentage of students with foundation thoughts is similar in both countries.
- H9: Students in the Swiss sample show a higher entrepreneurial activity than in the German.
- H11: Students in Switzerland show more foundation ideas.
- H12: Team-based start-ups are the most preferred foundation type in both countries.

Country and gender-specific hypotheses:

- H4: The distribution of own risk assessment is gender-specifically equal.
- H5: The necessity-driven motive "way out of unemployment" is similarly rated between male and female students.
- H6: Finding the right business idea is the biggest barrier among female students of both countries.
- H7: Male and female students do not rate the opportunities of support from universities in case of entrepreneurial topics significantly different.

H10: Students show gender-specifically the same intensity of entrepreneurial activity.

3 Results

The German sample includes to 30.13 percent and the Swiss sample to 36.09 percent female students. Students in the Swiss sample are mostly between 20–25 years old (about 90 %). In Germany, five percent are under 20 years old, 70 percent are between 20–25 years, 20 percent are between 26-29 years and nearly five percent are over 30 years old. All in all, 92.81 percent of the Swiss students and 85.21 percent of the German students are under-graduate full-time students. The remaining percentage in Switzerland is allotted to post-graduate full-time students. In Germany, 7.19 percent are allotted to post-graduate full-time students and 13.06 percent to the post-graduate distance learning students. So, H1 has to be rejected; students in the Swiss sample are significantly younger than students in the German sample, especially because of the higher percentage of distance learning and post-graduate students in the German survey. Logically, also H2 must be neglected. The duration of academic studies is significantly diverse in both countries, the students in Germany show clearly more finished terms.

The country-specific assessment of risks in both countries does not diverge. In both countries nearly 50 percent of the students are willing to take risks (Switzerland: 47.84 %, Germany: 50.27 %), abreast 45.51 percent of risk-averse students in Switzerland and 41.99 percent in Germany. In both countries about four percent are very willing to take risks, and 4.07 percent are very risk-averse in Germany against only 2.66 percent in Switzerland. All in all, because of the medium values of risk assessment, students in Germany appear to be more willing to take risks. But finally, H3 has to be rejected; there is no significant diversity in the country-specific consideration of risk assessment. The findings of the genderspecific analysis are contrary to these results. H4 has to be rejected. There are gender-specific differences in risk assessment of male and female students in both countries and across both countries. In Germany, 5.93 percent of the female students are very risk averse (male: 3.26 %), 49.89 percent are risk-averse (male: 38.54 %), 42.20 percent are willing to take risks (male: 54.07 %) and 1.98 percent are very willing to take risks (male: 4.98 %). In the Swiss sample 3.74 percent of the female students are very risk-averse (male: 2.06 %), 60.75 percent are riskaverse (male 37.11 %), 34.58 percent are willing to take risks (male 55.15 %) and 0.93 percent are very willing to take risks (male 5.67 %). The significant genderspecific difference is clearly visible, especially in Switzerland with a higher difference between the risk assessments in the gender context, as shown in figure

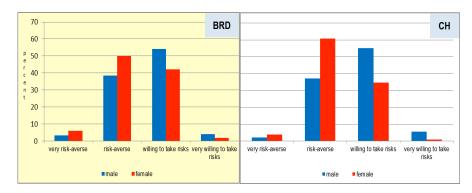


Figure 1

Gender-specific risk assessment in Germany and Switzerland (Source: Own Illustration).

The motives for starting a new venture are very similar in both countries. Self-fulfilment and the opportunity to realize one's own ideas are the highest rated motives in both countries and also gender-specific nearly similar. Force and reputation are at the bottom of the ranking. Also earnings in general or higher earnings compared to the actual situation also rank in the midfield. Except for one point, there are no appreciable differences among both genders. The necessity-driven aspect way out of unemployment is rated significantly higher among both genders in the surveyed countries. Especially again in Switzerland, female students rate this motive clearly higher than the male students (in Germany 0.36, in Switzerland 0.56 points on a scale from 0 - not important to 3 - very important). These differences in this necessity-driven aspect are more than significant, so that H5, which emanates from a similar rating between the cross-national gender-specific weightings, has to be rejected. Female students of both surveyed countries judge this point higher than their male fellows.

As mentioned before, financial aspects are rated as the most difficult barrier in the surveys of both countries. Lack of equity, one's own financial risk and lack of debt capital are the highest barriers in Germany. In Switzerland, also difficulties in the lack of equity, finding the right business idea and one's own financial risk are the top 3 in the ranking. This is an interesting finding, especially because of the excellent financial situation and the highly developed banking sector of both countries. In Germany, know-how deficit, lack of time and support of friends and family cause fewer problems. Also a lack in entrepreneurial qualification, the economic-political environment and support of friends and family are no big barriers. Finding the right business idea tends to be a greater barrier in Switzerland (rank 2 of 17). In Germany this point occupies in the midfield (rank 6 of 17). From a gender-specific point of view, the differences between both genders in Switzerland are clearly visible in the terms lack of debt capital, one's own financial risks and fear of failure. All barriers are rated more than 0.8 points higher by the female students (ranking from 0, no difficulty to 6, highest difficulties). In

Germany, there are no such big gender-gaps. The greatest differences, which are also rated higher by female students, appear in the barriers low sales (difference 0.41 points) and low earnings. Interestingly, there is no difference in both countries between male and female students regarding the barrier finding the right business idea (difference of 0.03 points in Germany and 0.00 points in Switzerland). So it is not surprising that H6 has to be rejected, there are statistically nonsignificant differences between both genders. Female students of both countries do not rate this point significantly higher than their male fellows.

Universities are mentioned in literature as places were great ideas can emerge and grow. As a meeting point for students of different study paths, therefore also different skills, there is a highly interesting mix of students who are able to start a high-potential, team-based business. This opportunity is seen by different countries and universities. Especially the appliance of courses and the support in case of financial aspects is being more strongly developed. But in literature, an improvement of the cooperation between the government and the universities, especially through the opportunity of allocating money to the universities, is still postulated. Also the cooperation with private companies or all types of financial institutions is regarded as sensible in literature (Walter/Walter 2008).

The opportunity of getting support by universities is not notably judged by the students in both samples. On average, no point is rated as very important from a cross-gender point of view. The highest cross-gender ratings are achieved by students in both countries in the point courses and business games. No importance is attached to the aspect specific contact-point and university in the role of an incubator.

All in all, there is no significant cross-country difference between the ratings of the students in both surveys. This does not include the results of the gender-specific analysis of both countries. In nearly all points, female students rate the support opportunities of universities in case of entrepreneurial aspects higher than their male fellows. Consequently H7, from a cross-country point of view there is no difference between the gender-specific ratings of the students, has to be rejected.

58.43 percent of students in the Swiss sample have thought by now about starting a new venture compared to 55.97 percent in the German sample. In statistical terms, there are no significant differences between the students of both countries, so H8, students in both countries show a similar percentage of thoughts about starting a new venture, has to be confirmed. But, the simple question about the existence of start-up thoughts, categorized in yes or no, is not specific enough to derive target group-specific recommendations to intensify entrepreneurial activity in a country. Therefore, the classification of students in foundation ambition types gives more in-depth empirical findings.

In the Swiss sample 48 percent of the students are foundation-laymen, compared to 54 percent in the German sample. Nearly 13 percent of the students in both countries are foundation-sensitized, 29 percent in the Swiss sample and 26 percent in the German sample are foundation-interested. Five percent in the Swiss sample are preparers or founders. Also four percent of the students of the German sample are foundation-preparers or founders, as shown in figure 2. Due to statistically nonsignificant differences, H9, students in Switzerland show a higher entrepreneurial activity, has to be rejected, a fact that is contrary to the findings of the Global Entrepreneurship Monitor and its results of the total entrepreneurial activity which demonstrates the need for a student-specific analysis.

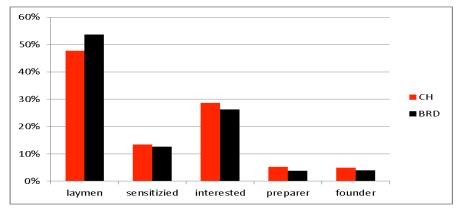


Figure 2

Country-specific distribution of foundation ambition types (Source: Own Illustration).

Students in Germany and Switzerland show no significantly deviating foundation ambition and therefore activity. These findings are contrary to the gender-specific analysis of the foundation ambition types. H10, from a cross-country point of view, male and females students show similar foundation activity, must also be rejected; male students are clearly more active than their female counterparts, as shown in figure 3.

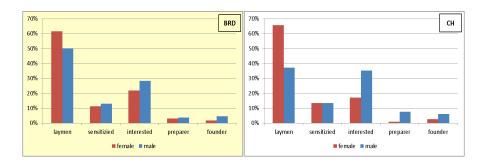


Figure 3

Country- and gender-specific distribution of foundation ambition types

Source: Own Illustration

Female students in Switzerland expect to found a new venture in about 5.4 years with an additional start-up probability of 24.33 percent, male students in Switzerland in 3.84 years with an additional probability of 33.08 percent. Again there are fewer gender-specific, but also clearly visible differences in Germany. Female students expect to set up a company in 5.34 years with an additional probability of 32.42 percent. On average, male students want to found their own business in 4.82 years with only slightly higher start-up probability (34.05 %).

One reason might be the existence of a business idea. 17 percent of the female students in Switzerland have a business idea and nearly 20 percent in Germany. About 35 percent of male students in Switzerland and 30 percent in Germany have a business idea. Due to statistically nonsignificant country-specific differences between the existences of business ideas, H11, students in Switzerland tend to have more business-ideas than students in Germany, has to be rejected.

Accompanied by the aforementioned findings, especially about risk assessment and seed capital, the students in both samples tend to start a business team-based and in part-time. 50 percent of the students in Germany, with no visible gender-differences, want to start a business with at least one other person. In Switzerland, nearly 62 percent want to found a business team-based, with slightly more intention to do so in the group of the female students. Due to statistically nonsignificant differences in both countries H12 has to be approved.

4 Implications

Both countries, Switzerland and Germany, are on low entrepreneurial activity level, despite good figures in terms of the financial, economic and infrastructural framework. In Germany and Switzerland, where experts see the degree of

extension of governmental support programs on the highest level of all innovation-driven economies, no beneficial effect regarding the total entrepreneurial activity of both countries can be observed, especially in comparison to the United States which are quantitatively at a significantly lower level than the two surveyed countries but leading in the TEA ranking of the Global Entrepreneurship Monitor. The quality of the support programs in Germany and Switzerland, which should normally be accompanied by a positive influence on the entrepreneurial activity, is therefore highly questionable (Klandt/Brüning 2002; Brixy/Hundt/Sternberg/Stüber 2009)

The gender gap in case of start-up propensities and entrepreneurial characteristics of students is clearly visible in Switzerland and Germany, especially in the former country it is obviously larger than in the latter.

From a country-specific cross-gender point of view, except for the results of age distribution and number of passed terms, there are statistically no significant differences in every thesis on equality between the two countries under review. With the extension to gender-specific aspects, every thesis on equality between the two genders under review must be neglected. Except for the judgement about finding the right business idea where no significant differences can be seen, in all other points there is a clearly visible gap between male and female students. Female students are on a lower entrepreneurial activity level. They judge the opportunities of support from universities higher than their male fellows. The necessity-driven motive way out of unemployment is also judged higher by female students who show a higher level of risk-aversion. All in all, not only the analysis of the specific student group and not only the focus on all people between 18 and 65 seems to be useful. Also a gender-specific view seems to be able to derive new helpful findings in case of entrepreneurial facilitation (Fossen 2009; Gorji 2011; Kariv 2013).

Recommendations derived from this survey, assisted by findings from the literature-based review, for improving the entrepreneurial activity of students through universities are expansion and better announcement of offers provided by universities regarding entrepreneurial topics. Students often criticize that even if there is special entrepreneurial support from their university, there is need for improvement in the way of making it public. Another request, especially from literature, is to abolish the separation of the disciplines and thereby the disentanglement of entrepreneurial teaching from the chair of business economics. Entrepreneurship should stand alone and has to develop methods which can be integrated in each branch of teaching, for example engineering and natural science (Cesinger/Müller 2009; U.S. Department of Commerce 2013).

Further improvements, which are derived from the findings of the survey, concern the call for financial help from universities and the often criticized constricted focus on high-tech start-ups as well as the disregard of concept-creative models for starting a new venture. Both improvements seem to be able to minimize the highly rated barriers of financial nature. Surely, universities are not able to allocate enough seed or venture capital, but the cooperation with venture capital companies might help solve financial problems. Negligence of this financial option in both countries, compared to the United States, seems to be one outstanding reason for the low entrepreneurial activity level (Walter/Walter 2008; OECD 2013; Dapp/Meyer 2013).

So, through the adjustment of various setscrews and a stronger impact on the determinants of foundation ambitions exerted especially by government and universities, the target of raising entrepreneurial activity in the surveyed economies seems to become more realistic, in order to save long-term growth and wealth of these countries. There are plenty of opportunities for improving the entrepreneurial education of universities. But any further specific analysis of more target-specific groups will not help encourage people to become self-employed as income alternative, a fortiori, if support programs from universities are unknown to the students or not implemented (OECD 2010; Baldegger/Fueglistaller/Sieger 2011; Bergmann/Cesinger/Ostertag 2012; Gentinetta 2012).

All these remarks above indicate the importance of advancing entrepreneurship education and support in both countries by considering the contextual framework conditions as well as individual requirements of the students in diverse phases of the start-up process. But in order to receive further findings of how to upgrade entrepreneurship support infrastructures for students and graduates in Germany and Switzerland, appropriately more comprehensive analyses should be performed, enabled by the GESt-study due to the provision of resource-based data about the questioned students who ultimately are the deciders on their potential entrepreneurial activity. The objective should not solely be to increase the number of enterprises by forcing students into entrepreneurial activity but rather to sensitize them to business creation, teaching them entrepreneurial basic knowledge, and offering them support during all phases of their start-up processes, so that already during they studies, they are open to look for and perceive potential business opportunities that might result - possibly after some years of work experience - in innovations and high-potential firms respectively or at least facilitate them creating their own jobs and asserting themselves and their ideas.

Н	Description	Type of Hypothesis	Hypothesis Formulation on	Test on	Testing Procedure			Result for Hypothesis
		cross-gender (c) / gender-specific (g)	equality (e) / unequality (u)	equality (e) / unequality (u)	Mann-Whitney- U Test	Kolmogorov-Smirnov Test (two sample)	Kruskal-Wallis Test	(a) approved / (d) declined
1	The age distribution in both countries does not deviate significantly.	С	e	e	,000	,000	-	d
2	The quantity of passed terms from students in Germany and Switzerland is similar.	с	e	e	,005	,000	-	d
3	Students in the Swiss sample are more risk-averse than in the German.	с	u	e	-	,000	-	d
4	The distribution of own risk assessment is gender-specifically equal.	g	e	e	,000	,000	-	d
5	The necessity-driven motive "way out of unemployment" is similarly rated between male and female students.	g	e	e	,000	,000	-	d
6	Finding the right business idea is the biggest barrier among female students of both countries.	g	u	e	0,766	1,000	-	a
7	Male and female students do not rate the opportunities of support from universities in case of entrepreneurial topics significantly different.	g	e	e	< ,050 (in 6 of 10 subitems)	-	-	d
8	The percentage of students with foundation thoughts is similar in both countries.	С	e	e	0,454	0,999	-	a
	Students in the Swiss sample show a higher entrepreneurial activity than in the German.	С	u	e	0,055	0,378	-	d
10	Students show gender-specifically the same intensity of entrepreneurial activity.	g	e	e	,000	,000	-	d
11	Students in Switzerland show more foundation ideas.	С	u	e	0,611	1,000	-	d
12	Team-based start-ups are the most preferred foundation type in both countries.	С	e	e	-	-	,102	a

Figure 4 Results of Hypothesis Testing (Source: Own Illustration).

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