Do country-level institutions influence YouTubers as digital entrepreneurs?

ABSTRACT

Digital platforms have brought opportunities for individuals to undertake different initiatives and become entrepreneurs. For example, we observe YouTubers as digital entrepreneurs capable of creating content while making money. Their activity is inherent to creativity and digital skills. Yet, little is known about YouTubers' response to the external environment, hence, we analyze the effect of both the entrepreneurial and pro-market contexts on this type of entrepreneurship. To this end, we use information from three different sources: statistics from the Social Blade and Heritage Foundation websites, as well as the world development indicators (WDI) from The World Bank. We estimated nested models through OLS to observe that the entrepreneurial environment is positively associated with YouTubers' activity, whereas the pro-market environment negatively affects the number of YouTubers' views and subscribers. Our findings advance knowledge about the role of institutions in a different form of entrepreneurial activity and the potential substitution between traditional entrepreneurship and digital entrepreneurship. Thus, theoretical and policy implications are discussed.

Keywords: Digital entrepreneurship; entrepreneurial environment; institutions; YouTubers.

INTRODUCTION

The literature on digital entrepreneurship is getting stronger thanks to the connection with other disciplines such as information systems (Akhter, 2017), innovation (Nambisan et al., 2019), management and business (Ghezzi & Cavallo, 2020), among others (Zaheer et al., 2019). All these disciplines have observed this phenomenon in terms of its internal characteristics (e.g., quality of content, contents' theme, frequency of uploads, etc.) (Sahut et al., 2021). For example, literature on digital entrepreneurship focuses on looking at how new ventures adapt technology and social-media to boost their bottom line (Elia & Passiante, 2020), which define digital entrepreneurial activity based on these characteristics. However, traditional perspectives on digital entrepreneurship do not dive into how this type of entrepreneurship actually materializes (Ashman et al., 2018; Nambisan, 2017; Whipple, 2019).

Different nuances have been empirically analyzed. This is the case of app developers and platforms (Fischer & Reuber, 2011; Srinivasan & Venkatraman, 2018), for example. A recent but growing phenomenon is gaining attention from youngers as it becomes an alternative to get a job and earn money while doing something they enjoy. This is the case of YouTubers, who through their creativity, passion, and entrepreneurial spirit open a YouTube channel, create content, gain an audience, and monetize their effort (and in some cases create jobs) (Whipple, 2019). Ashman et al. (2018) define YouTubers as autopreneurs, possessing innate communication skills and suffering similar barriers as compared to traditional entrepreneurs. Literature on the use of YouTube channels as digital entrepreneurship is almost null, whit a particular focus on the personal characteristics of YouTubers (Mardon et al., 2018; Welbourne & Grant, 2016). However, the external context can also affect both the development and consumption of content. Reuber and Fischer (2021) state that digital entrepreneurship and its relationship with the environment (a society, city, region, or country) depend on the type of platform analyzed. This leaves room for different questions. For instance, what does make digital entrepreneurship successful in different contexts? Despite the growing number of studies, prior literature falls short when it comes to the effects of external factors (such as the entrepreneurial and pro-market environment) on digital entrepreneurship.

Hence, we analyze the effect of both the entrepreneurial and institutional contexts on this type of entrepreneurship. To achieve this, we use North's (1990) approach to institutions, who focuses on the existence of "rules of the game" to create incentives that drive the economic behavior and intentions of individuals. This framework is useful to understand the role played by both the entrepreneurial environment (approached through a new business registered) and pro-market environment (such as economic freedom) at the country level in digital entrepreneurship (i.e., YouTube views and subscribers from channels). To test our suggested relationships, we use three different sources: statistics from the Social Blade and Heritage Foundation websites, as well as the world development indicators (WDI) from The World Bank, which were useful to obtain information on the channel- and country-level characteristics. Particularly, we use the top 500 channels with the most subscribers for 100 countries, which are linked to the information from the Heritage and WDI. Thanks to this rich database, we develop nested models estimated through ordinal least square (OLS).

The results show that when the entrepreneurial environment increases, digital entrepreneurship such as views and subscribers from YouTube channels grows. The results also show that when the pro-market environment improves, digital entrepreneurship such as views and subscribers from YouTube is reduced. These results serve to discuss some recommendations for academics and policymakers, who should consider digital entrepreneurship as an alternative way for the youth population. In this sense, our results extend the notion of environmental factors for entrepreneurship action beyond traditional activities (Bruton et al., 2010; Thornton et al., 2011; Welter, 2011). Even though YouTube is a virtual place, what (digital) entrepreneurs do to monetize their activity is also conditioned by the environment. The observed results lead to an important theoretical contribution. Different from prior literature about digital entrepreneurship (Elia & Passiante, 2020), it seems that a substitution effect between traditional and digital entrepreneurship arises due to environmental enablers or constrains. Hence, this research helps with expanding the idea of entrepreneurial diversity to non-traditional activities (Welter et al., 2017), viewing YouTubers as entrepreneurs. It is not merely an initiative of opening and starting a YouTube channel, but it requires the identification of a potential "hot" topic, hard working on content and quality, and decision-making about getting assets (cameras, microphones, lights, drones, etc.), collaborations, and sponsors; all these framed by a set of environments. Certainly, this

activity might be proximate to youngers, who can benefit from policies that facilitate access to the internet and acquisition of electronic devices, helping them create their job and perhaps opportunities for others to join their project.

After this introduction, the research is structured as follows. Section 2 presents the theoretical framework, where we establish institutional structures as the main axis of the research. In Section 3, we propose the development of hypotheses. Section 4 presents the methodology that helps test our suggested hypotheses. This involves the source of the data and the empirical strategy. Results are presented and described in Section 5. Finally, in Section 6, we conclude and generate and discuss theoretical and policy implications. We also identify some limitations that lead to future research lines.

THEORETICAL FRAMEWORK: INSTITUTIONAL ECONOMICS
Main foundations

According to North (1990), institutions are the humanly devised constraints that shape human interaction, due to the structure of incentives in human exchange, whether political, economic, or social, but also into the government. North (1990, 2005) defines different types of rules, which are grouped into two main categories. First, there exist formal institutions that encompass regulations, laws, policies, etc. All of them are contained in written official documents that aim to achieve particular social, economic, and political objectives. Second, and complementary, there are unwritten norms that represent the cultural sphere of any society, consisting of habits, social perceptions, and preconceptions that support or exert pressure on human behavior, known as informal institutions. Thus, institutions condition the economic performance of nations through time (North, 1990). However, economic performance also depends on "adaptive efficiency," a society's effectiveness in establishing institutions that are productive, stable, fair, accepted, and flexible enough to be changed or replaced in response to political and economic feedback (North, 2005). As an example, Baumol (1990) provides a definition of three types of activities that evolve thanks to the system of incentives that stem from institutions. Productive, unproductive, and destructive entrepreneurship emerge as a consequence of restrictive or enabling environments, which in turn increase the level of economic development (or destroy society's well-being).

Stimulated by this influence on economic behavior and individual decision-making, entrepreneurship research has recently adopted the institutional economics framework (Bruton et al., 2010; Welter, 2011) to understand the behavior and performance of digital entrepreneurship (Geissinger et al., 2019; Sahut et al., 2021). Thornton et al. (2011) have explored past literature on entrepreneurship, finding that informal institutions tend to be more representative for entrepreneurial activity than formal rules. Bjørnskov and Foss (2016) and Urbano et al. (2019) add insights into this analysis by emphasizing the role of institutions in defining the quality of entrepreneurship and its effects on the economy. In this regard, entrepreneurship is presented as a mechanism that translate macroeconomic institutions into social outcomes such as economic growth. In most of this literature, nonetheless, traditional entrepreneurship has been extensively explored. Yet, what does happen with other emerging forms of entrepreneurial activity such as those taking place in online platforms? It seems that a theoretical gap exists to understand whether environmental factors also explain activities that are thought skilled-intense (Ashman et al., 2018).

Digital Entrepreneurship

To fill a potential theoretical gap, we need to understand a definition of digital entrepreneurship to see whether there exists a relation to the context or not. According to the European Commission (2015):

> "Digital entrepreneurship embraces all new ventures and the transformation of existing businesses that drive economic and/or social value by creating and using novel digital technologies. Digital enterprises are characterized by a high intensity of utilization of novel digital technologies (particularly social, big data, mobile and cloud solutions) to improve business operations, invent new business models, sharpen business intelligence, and engage with customers and stakeholders. They create the jobs and growth opportunities of the future."

Digital start-ups started the major wages of digital innovation during the last decade, some examples are Airbnb (sharing economy), Amazon (e-commerce), Google (search business), and Facebook (social media) (Sahut et al., 2021). Hence, some definitions of digital entrepreneurship have emerged, and their contributions to academia can be classified into two main categories: i) Research on how digitalization is transforming entrepreneurship and the traditional venture creation process (digital technologies as enablers), and ii) research on generated entrepreneurial opportunities through digital technological innovation (digital technologies as both enablers and outputs) (Sahut et al., 2021).

Despite the novelty of this type of activity, literature is scarce but growing, leaving room to the relationship with other disciplines (Sahut et al., 2021; Zaheer et al., 2019), namely, information systems (Steininger, 2019), innovation (Berger et al., 2021), management and business (Bican and Brem, 2020; Franco et al., 2021), policy (Ngoasong, 2018), among others (cf. Proksch et al., 2021; Zaheer et al., 2019). Although the academic field is beginning to take an interest in digital entrepreneurship due to the growing literature, it still has a long way to go, as there are gaps in the literature. First, there is no solid connection between institutions and digital entrepreneurship. Second, according to the European Commission (2015) definition, there are no innovative forms of digital entrepreneurship in the literature.

Regarding the first gap, there is little evidence that relates institutions to this type of entrepreneurship. On the one hand, Geissinger et al. (2019) explore the role of cities in clearing the way for digital entrepreneurship and overcoming institutional resistance to innovation. Digital entrepreneurship may result in institutional turbulence and new initiatives are frequently blocked by vested interest groups who posit superior financial and relational resources. Geissinger et al. (2019) explored historical case studies of this entrepreneurial activity in the city of Stockholm along with extensive material on the sharing economy in Sweden. The results suggest that cities offer an environment that is critical for digitial entrepreneurship. The economic, business, and technological diversity may provide the field conditions required for institutional change to take place and to avoid regulatory capture. On the other hand, McAdam et al. (2019) examine the necessity of digital entrepreneurship in developing economies (e.g., Saudi Arabia), due to the lack of a well-developed institutional framework in these countries. The authors make explicit the two-way causal interaction between entrepreneurial action, institutions altering behavior, and the social and cultural context, thus laying the foundations for future research. In other research for developing countries (i.e., India), Soluk et al. (2021) study how drawing on the support of various stakeholders helps overcome institutional voids and foster entrepreneurship in Indian microenterprises. Through surveying more than 1,000 microentrepreneurs in rural areas, the authors find that both the families and communities (in particular self-help groups) of entrepreneurs have a positive and significant effect on entrepreneurship that is strengthened

6

when digital technologies are used. Yet, despite this evidence, the role of institutions within the digital entrepreneurship field is still not clear.

Regarding the second research gap, the majority of the contributions of digital entrepreneurship are focused on how digitalization is transforming entrepreneurship and the venture creation process as we know it, and not on how to generate entrepreneurial opportunities through digital technological innovation. Drawing on Lazakidou and Pournaras (2008), Sahut et al. (2021) assume that the primary effect of digital technologies is the expansion of the human ability to acquire, produce, distribute, and consume information at an unprecedented amount, rate, and reach. This is consistent with what YouTubers, as digital entrepreneurs, do since they meet all the characteristics taking advantage of entrepreneurial opportunities (Guiñez-Cabrera & Aqueveque, 2021). Although the literature that takes YouTubers as digital entrepreneurs is reduced, in this study we propose a theoretical development to raise the basis of new relationships that allow us to identify the importance of institutions for digital entrepreneurship.

HYPOTHESES DEVELOPMENT

Digital technologies have recently had a significant impact on the way people imagine, create, and develop a new business venture (Elia et al., 2020). Due to the key role of digital entrepreneurship in the new ventures, Kraus et al. (2019) developed a research map based on the existing literature on digital entrepreneurship. The authors identify and discuss six streams of research: digital business models (Bican et al., 2020); digital entrepreneurship process (Balocco et al., 2019; Le Dinh et al., 2018); platform strategies (Hsieh and Wu, 2019; Pano and Gjika, 2020); digital ecosystem (Nambisan and Baron, 2021); entrepreneurship education (Secundo et al., 2020; Vorbach et al., 2019); and social digital entrepreneurship (Ghatak et al., 2020; Ibáñez et al., 2021). These streams reveal the little study on new forms of digital entrepreneurship (e.g., YouTubers) and their relationship with the entrepreneurial and pro-market environment.

Ashman et al. (2018) seek to move beyond the exalted figure of the entrepreneur that predominates the study of entrepreneurship and try to focus on what they call autopreneurs; that is, young YouTubers who want to stand out. The authors show how YouTubers internalize a structure of feeling, divined from a neoliberal ideology that shapes their everyday affairs, and find that there are three key factors (the dynamics of competition, the

creativity dispositif, and technologies of the self) that negatively affect the quality of their lives. So it can be intuited that YouTubers are entrepreneurs facing constraints and, in some cases, obtain positive returns in the long term (Jung & Nüesch, 2019).

Although the literature surrounding the definition, characterization, and behavior of YouTubers (and their channels, which are the tool to access the market) is limited, some studies help us clarify this new wave of digital entrepreneurship (Arthurs et al., 2018; Törhönen et al., 2021). For instance, there are several approaches to the study of this type of digital entrepreneurship. One approach is based on studying the consumer's decision. In this case, Tüzemen (2020) seeks to identify and prioritize possible alternatives to show how YouTube-based users decide on the YouTubers (i.e., YouTube educational channel owner) that they select and constantly improve. Another approach is based on studying the economics of social media superstars (SMS). Here, Budzinski and Gaenssle (2018) present the first empirical work on SMS with original data from YouTube. The authors use various econometric techniques and analyze a unique sample of 200 YouTube stars out of four different video categories to shed light on this new phenomenon. In this empirical analysis, the authors find evidence supporting an inverse U-shape influence of upload frequency on the success of SMS, finding that the duration and experience in the market have a significant influence on social media success. From a statistical approach, Bärtl (2018) attempts to provide an overall characterization of YouTube based on a random sample of channel and video data. Bärtl (2018) shows how video provision and consumption evolved over the past 10 years. This author presents evidence that older channels have a significantly higher probability to garner a large viewership. However, Bärtl's (2018) evidence also shows that young channels become successful quickly, depending on whether they choose their genre wisely.

Another approach seeks to characterize the virality (videos that have a strong impact and are seen by a large number of people in a short period) of the videos. On the one hand, Khan and Vong (2014) seek reasons for some videos going viral over YouTube. The authors collected data of 100 all-time-most-viewed YouTube videos and information about the users associated with the videos, by allowing them to construct and test an empirical model to understand the relationship among users' social and non-social capital, video characteristics, external network capital, and virality. The results show that the popularity of the videos was

not only the function of the YouTube system per se but also that network dynamics and offline social capital play crucial roles in the viral phenomenon, particularly view count. On the other hand, France et al. (2016) described a framework for modeling online video behavior, which is based on growth curve modeling. The framework can be used to analyze online video behavior, categorize videos based upon growth patterns, and predict future views. Although these researches lay the groundwork for this approach, there is much to do. In a more detailed analysis, Hoiles et al. (2017) examine the sensitivity of YouTube meta-level features and social dynamics using real-world data consisting about 6 million videos spread over 25 thousand channels. The authors find that some key meta-level features affect the popularity of a video. These features are first-day view count, the number of subscribers, contrast of the video thumbnail, Google hits, the number of keywords, video category, title length, and the number of upper-case letters in the title. The authors also discover that there is a causal relationship between views of a channel and the associated number of subscribers. These findings provide a useful understanding of user engagement in YouTube.

Other approaches are related to the effects of digital entrepreneurship such as YouTube channels (views or subscribers) on the beauty industry (Gannon & Prothero, 2018; Mardon et al., 2018), education (Saurabh & Gautam, 2019), music (Liikkanen & Salovaara, 2015), marketing (Tafesse, 2020; Vonderau, 2016; Wang & Chan-Olmsted, 2020), and communication (Welbourne & Grant, 2016). Yet, evidence about the effects on digital entrepreneurship such as YouTube views and subscribers is still scarce. In this regard, some factors that affect this type of entrepreneurship (i.e., YouTubers' views and subscribers) are the way channels are discovered (Zhou et al., 2016), the type of channels (Bärtl, 2018), user-generated content (Arthurs et al., 2018), YouTube algorithm (Fyfield, 2021), reliable communication (Welbourne & Grant, 2016), and the monetization of the videos (Kopf, 2020), among others.

It is well known that the entrepreneurial process of becoming a YouTuber can be exhausting and a painful experience due to social exposure (Ashman, 2018). Therefore, it is necessary to observe the effect that the role model of entrepreneurial structures has on this type of entrepreneurship, as it may facilitate the growth process of YouTube channels. Traditional literature on entrepreneurship has shown that an entrepreneurial environment and society motivate much more entrepreneurship action (Audretsch, 2007; Thurik et al., 2013).

Krueger and Bleazer (1994) discover a powerful mechanism, in which entrepreneurial potential acts as the social capacity to solve problems in an entrepreneurial manner. Accordingly, individuals within a society find entrepreneurship as a potential career choice. Aparicio et al. (2021) provide evidence about the role of entrepreneurial potential in helping potential entrepreneurs. National opportunity recognition is key in this process, as knowledge flows from existing companies to potential and nascent entrepreneurs (Acs et al., 2009, 2013). Thus, it seems that a high and solid business demography bring opportunities for others when deciding entrepreneurship.

For example, one of the entrepreneurial structures to consider is the multichannel networks, which are the new breed of intermediary firms that link entrepreneurial YouTubers with the advertising, marketing, and screen production industries (Lobato, 2016). This type of structure can easily lower the entry barriers to the multimedia industry, as well as result in the accelerated growth of YouTube channels through views and subscribers. Gardner and Lehnert (2016) study the importance of multichannel networks to enter the multimedia industry, ensuring the growth of channels through collaborations, audience engagement, and brand relationships, under an average cost of 16% of channels revenues. This helps us understand the effects that an entrepreneurial environment as macroeconomic phenomena (Baumol, 1990) can have on digital entrepreneurship such as YouTube views and subscribers. Although indirectly, the reviewed literature enables us to propose the following hypothesis:

Hypothesis 1: The entrepreneurial environment has a positive effect on YouTubers' views and subscribers as digital entrepreneurship.

According to Urbano et al. (2019), institutions define the level and type of entrepreneurship at the regional and national levels to achieve social outcomes. Therefore, it might be important to observe a potential complementarity (or substitution) between both the entrepreneurial and institutions environment. It is vitally important to analyze clearly what happens with institutions, which establish the rules of the game of societies (North, 1990, 2005).

The literature exploring the relationship between institutions and entrepreneurship is extensive (Boettke & Coyne, 2009; Burns & Fuller, 2020). Thus, there are many branches in this type of literature. Most of this literature observes the relationship between institutions and entrepreneurship to spur economic development in countries and regions (Acs et al., 2008; Urbano et al., 2019). On the one hand, Bosma et al. (2018) analyze together institutions, entrepreneurship, and economic growth using a parsimonious growth model in a 3SLS specification. Using a set of proxies for pro-market environment, financial stability, small government, and perceived start-up skills, the authors show that productive entrepreneurship contributes to economic growth. On the other hand, Aparicio et al. (2016) explore the institutional factors that encourage opportunity entrepreneurship to achieve higher rates of economic growth. The authors find that informal institutions have a higher impact on opportunity entrepreneurship than formal institutions. In other research analyzing the type of institutions, Estrin et al. (2013) explore the negative impact of higher levels of corruption, weaker property rights, and greater government activity on entrepreneurs' aspirations to increase employment. Researchers find that the relationship between institutions and entrepreneurship activity is complex because they benefit simultaneously from both strong government (in the sense of property rights enforcement) and smaller government (in terms of taxes, hence budgeting).

The existing complexity leads to dive into the nuances that the pro-market environment may have. For instance, further researchers explore the role of institutions in the development and quality of entrepreneurship. First, Aidis et al. (2008) use a comparative perspective to explore how institutions and networks have influenced entrepreneurial development in Russia, suggesting that Russia's pro-market environment is crucial in explaining the low levels of entrepreneurship development (measured in terms of both the number of start-ups and existing business owners). Second, Chowdhury et al. (2019) examine how formal and informal institutional dimensions (i.e., availability of debt and venture capital, regulatory business environment, entrepreneurial cognition and human capital, corruption, government size, and government support) affect the quality and quantity of entrepreneurship between developed and developing countries. The authors show that institutions are important for entrepreneurial activity, but not all institutions play the same role as to there is a dynamic relationship between institutions and economic development.

This adds new ideas to prior research about the importance of the pro-market environment for diversity in entrepreneurship (Welter et al., 2017). However, the relationship between institutions and other forms of entrepreneurship such as digital entrepreneurship is still an open question.

Given the scarce literature on this relationship, the research field does not have a clear focus (Zaheer et al., 2019). However, four interesting studies can be highlighted. First, Hansen (2019) explores digital entrepreneurship and the impact of digitalization on the entrepreneurial activity in Beijing applying institutional theory to investigate the state-sponsored push for entrepreneurship, innovation, and digitalization, and how the entrepreneurs are experiencing transformed environments. The author finds that entrepreneurs experience a heightened societal trust and increased support, yet a lack of institutional trust. Second, Satalkina and Steiner (2020) conducted a systematic literature review, finding 52 core papers that allow them to identify key categories of digital entrepreneurship and also its differentiation from other types of business activities. Within these key categories, one can find relevant ecosystems, showing that the influence of external infrastructure and institutions plays a fundamental role in the analysis of entrepreneurship. Third, Nambisan (2017) develops a discussion around the nature of uncertainty inherent in entrepreneurial processes and outcomes as well as the ways of dealing with such uncertainty. The author argues that there must be an interconnection between economic, social, and institutional agents to boost digital entrepreneurship. And fourth, Jawad et al. (2021) investigate digital entrepreneurship and its influence on the business setting in developing economies. The authors find that entrepreneur's knowledge acts as a sensitive social expectation and enhances support, showing that the institutional requirements are important to entrepreneurship development. Although the literature that mentions the role of institutions in digital entrepreneurship such as a YouTube channel's views and subscribers is almost null, through the conducted literature review we can think that the pro-market environment affects this type of entrepreneurship by either facilitating or improving the conditions for traditional entrepreneurship. Thus, we posit the following hypothesis:

Hypothesis 2: The pro-market environment has a negative effect on YouTubers' views and subscribers as digital entrepreneurial activity.

METHODOLOGY

Data

To test our hypotheses, we created a database using three different sources of information. First, we use statistics from Social Blade (a website used in key research such as Tan et al. [2018] and Klobas et al. [2018]). One of the challenges we faced developing this research was specifically obtaining reliable and consistent data with the YouTube platform. YouTube channel statistics can be obtained directly from the homepage, using statistical tools and packages specialized in the extraction of this type of information. An example of this can be the use of the YouTube API, which allows queries and collection of channel's information. However, in using this methodology, we face an opportunity cost in terms of money and time, since the extraction of this information is costly and building a robust database for most countries requires a lot of time. In this matter, we employed the Web Scraping method (R programming language) to extract this information, which is composed of statistics for the top 500 channels with the highest number of subscribers across 100 countries. This methodology is suitable for our objective because we used the information already collected (directly from YouTube) and publicly showed by Social Blade. However, at this point we faced another barrier, because Social Blade's information required a membership if users wanted to download it through Social Blade's code. Therefore, using the Web Scraping methodology was the best decision in this case. Second, we utilized information from Heritage Foundation to capture the pro-market environment of countries. Third, the entrepreneurial environment was taken from the world development indicators (WDI), which is a source that alongside Doing Business and the governmental indicators databases from The World Bank served to gather information of controls.

We measure digital entrepreneurship in two ways, the number of views and subscribers that these channels have acquired since their inception. Hoiles et al. (2017) support the relationship between views of a channel and the associated number of subscribers, which allows us to use both variables as measures of digital entrepreneurship.

Our first independent variable at the country level is new business registered (in percentage), which represents the entrepreneurial environment. The intuition behind this is the role (model) of entrepreneurship as a macro phenomenon in encouraging others to

become entrepreneurs. Theoretical (cf. Pahnke & Welter, 2019) and empirical literature is extensive in this regard (cf. Aparicio et al., 2021; Capelleras et al., 2019), which support the idea of entrepreneurship at the regional or country level as an example for others to continue this career path.

Our second independent variable is economic freedom (a factor from 0 –low– to 100 –high quality) that encompasses property rights, government integrity, judicial effectiveness, tax burden, government spending, fiscal health, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, and financial freedom. Recent literature on institutions and entrepreneurship has adopted this approach to better understand the institutional setting of countries (cf. Bennett & Nikolaev, 2019; Cuervo-Cazurra et al., 2019).

To control the activity of the YouTube channels, we use variable uploads, which allows us to identify the number of videos uploaded to the platform since its creation. In addition, Social Blade's statistics allow us to identify the type of content created by these channels. Therefore, the channels are characterized by their content; namely, channels about animals, autos, comedy, education, entertainment, films, games, howto, music, news, nonprofits, people, sports, tech, travel, and undetermined. We can also know the longevity of the channel, through the inception date we can categorize the channel as old (created before 2010), established (created between 2010-2015), and new (from 2016 to 2021) (Ashman et al., 2018). All these are dummies equal to 1 if the channel belongs to a specific content or age group; 0 otherwise.

Country-level controls are also included. For example, we take into consideration population characteristics (urban agglomerations, by age 0-14, 15-64, and 65-above), technological characteristics (People using the internet and mobile cellular subscription), economic characteristics (GDP per capita, labor force, and unemployment), and social characteristics (education such as average years of schooling). To complete the database, by employing the country codes we can obtain the most used language in that country, so we established dummy variables for five languages such as English, Chinese, French, Spanish, and German (Hechavarría et al., 2018). Table A1 (in Appendix) shows all variable's descriptions.

Empirical strategy

The following full nested econometric model was used to observe the direct effect that both entrepreneurial environment (number of new businesses registered) and pro-market environment (economic freedom) had on digital entrepreneurship (channels' view and subscriber) in channel i in a specific country c:

$$DE_{ic} = \alpha \ + \ \beta_1 EE_c + \beta_2 PE_c + \beta_3 IC_{ic} + \beta_5 CC_c + \varepsilon_{ic}$$

(1)

The outcome DE_{ic} is related to digital entrepreneurship (i.e., views and subscribers). The effect of the entrepreneurial environment (new business registered) is captured through EE_c, while the pro-market environment is represented by PE_c. We condition on IC_{ic} and CC_c, which contain the effects of the individual and country characteristics, respectively. Standard errors were robust, to account for the arbitrary correlation of outcomes between countries.

In these models, "nested" means that one model is a subset of another. This type of model is used for several statistical tests and analyses, including multiple regression, conjoint analysis, and others (Allen, 1997). Nested models allow us to identify a full model that explains digital entrepreneurship through individual- and country-level variables, comparing it with other models, which contain additional restrictions. In our particular case, we are in an identification world, in which it is important not to discard any variable that could be significant (i.e., issues of omitted variables), so the nested models fit our intentions.

Thus, the ordinary least square (OLS) method is applied to estimate several nested models, which are controlled by individual and country characteristics. It is important to clarify that with these models and the proposed hypotheses, we seek to delve into a world of directly correlated relationships, leaving aside possible endogeneity and other problems related to the estimations.

RESULTS

Main findings

Table 1 shows the descriptive statistics of the variables used. On an individual level, some data to take into account are the average of 9 million subscribers of the channels in the sample, which is a high number of subscribers; the number of views far exceeds the number of subscribers by tautology, since a single user can get to see the same video as many times as he or she wants; the channels have on average 1243 videos uploaded to the platform; most of the channels are concentrated in the categories of entertainment, music, and people (mostly personal blogs). At the country level, it can be highlighted that on average around 67% of the population uses the internet.

In addition, we have run the variance inflation factor (VIF) to see whether multicollinearity exists. Our results show that the mean of VIF is 14.44 (over 10), which could indicate a collinearity problem (Hair et al., 1995). However, O'Brien (2007) states that values of the VIF of 10, 20, 40, or even higher do not, by themselves, discount the results of regression analyses. Instead, O'Brien (2007) claims that the elimination of one or more independent variables from the analysis could either lead to even bigger problems or suggest the use of ridge regression. O'Brien (2007) also describes that the result of a high VIF is of concern only in circumstances where collinearity is large enough to affect the significance of our estimators, meaning that collinearity is not a problem. In our case, VIF is slightly high due to the use of several dummy variables and the scaling levels of the labor force and mobile cellular subscription variables (Dodge, 2008; Everitt & Skrondal, 2010).

Table 1 about here

Concerning the main results, Table 2 shows our models through OLS estimation, reporting the relationships outlined in the hypotheses development. Models 1-12 are composed of nested models, where models 6 and 12 are the full nested econometric models for the dependent variables views and subscribers, respectively. Models 1-6 estimate the results on the dependent variable views, and models 7-12 estimate the results on the dependent variable subscribers. The composition of the nested models is as follows: first, models 5 and 11 keep out the language controls (i.e., Chinese, English, Spanish, German,

16

and French), which are crucial in this research due to cultural and communication barriers worldwide; second, in addition to models 5 and 11, models 4 and 10 do not hold the economic and social controls such as GDP per capita, labor force, and unemployment, which are key controls to determine the socioeconomic environment in which YouTubers operate; third, in addition to models 4 and 10, models 3 and 9 exclude the connectivity controls (people using internet and mobile cellular subscription), which are fundamental to access digital platforms; fourth, in addition to models 3 and 9, models 2 and 8 exclude the demography controls, which are important for the characterization of the users and content creators in each country; finally, in addition to models 2 and 8, models 1 and 7 exclude the longevity controls, these controls make it possible to identify the durability of YouTube channels.

In general, models 1-12 show that as the number of controls in the estimation increases, the explanatory variables improve their significance and effect on the dependent variables. In addition, the regression models fit better the observed data, due to an increase in the R-square, from 7.8% to 15.0% for dependent variable views, and from 15.5% to 33.2% on dependent variable subscribers. Similarly, the AIC and BIC information criteria of models 5-6 and 11-12 (being the latter the most complete ones) demonstrate the relative quality of the models for this specific data set, recalling that the lower the criterion value, the better the fit of the model to the data (Akaike,1974). An important point to note in all models is that although the number of controls was increased, the standard errors did not suffer strong increases.

Table 2 about here

As per the hypothesis testing, we focus on the results of the full nested models, i.e., explaining what happens in models 6 and 12. We suggest in hypothesis 1 that the entrepreneurial environment has a positive effect on YouTubers' views and subscribers as digital entrepreneurship. All Models support this hypothesis. When the entrepreneurial environment such as new business registered increases by 1%, digital entrepreneurship such as views and subscribers from YouTube channels increases by 0.105% and 0.182%, respectively. Although Hoiles et al. (2017) have supported the relationship between YouTube channel views and subscribers, model 12 fits the data better than model 6 (R-squared of

33.2% and 15.0% respectively). This is perhaps due to the background of the definitions of both variables and what they mean within the YouTube platform. Views can determine how viral a YouTube video can become (Khan & Vong, 2014), however, what determines the success of YouTubers in the long run, is the number of subscribers, which allows content creators a permanent number of views that they can monetize (France et al., 2016).

Hypothesis 2 has stated that the pro-market environment has a negative effect on YouTubers' views and subscribers as digital entrepreneurial activity. All models support this hypothesis. Focusing on models 6 and 12, when pro-market environment such as economic freedom increases by 1%, digital entrepreneurship such as views and subscribers from YouTube channels decrease by 0.002% and 0.005%, respectively. This supports Hansen's (2019) statement about the pro-market environment and its effect on digital entrepreneurship. This result is important because it indicates that exists a potential substitutivity between digital and traditional entrepreneurship, originated by the pro-market environment.

In addition to supporting the hypotheses, our results also help address the account inflation bias. One of the ways in which YouTube content creators could inflate their statistics is through the creation of multiple accounts. However, YouTube has user authentication policies (Reuber & Fischer, 2021), which would make it difficult to carry out this procedure. In addition, we estimate not only by number of subscribers, but also number of views, which would require a huge effort from content creators who are dedicated to inflate accounts. This would have implied that they must be in constant activity in each of the channels to generate an inflated effect on channels' statistics.

Robustness checks

To provide greater robustness to our results, Table 3 and Table 4 show estimates with different institutional variables. Table 3 shows results like those obtained in Table 2 since business freedom discourages digital entrepreneurship because it encourages traditional entrepreneurship (Udimal et al., 2020), while Table 4 shows that when there are barriers to traditional entrepreneurship such as the increase in starting business minimum capital, digital entrepreneurship is favored. It can be intuited that content creators, upon observing an increase in the minimum capital to create a business, make an effort to carry out higher quality videos to gain views and generate economic benefits (Foster, 2021).

Tables 3 & 4 about here

DISCUSSION AND CONCLUSION

Digital entrepreneurship has been analyzed as digital business models (Bican et al., 2020), digital entrepreneurship process (Balocco et al., 2019), platform strategies (Pano and Gjika, 2020), digital ecosystem (Nambisan & Baron, 2021), entrepreneurship education (Secundo et al., 2020), and social digital entrepreneurship (Ibáñez et al., 2021). However, there exists little literature on new forms of entrepreneurship (Nambisan, 2017) such as YouTube channels and their dependence to the entrepreneurial and institutions environments. That is why this research tried to fill some gaps by analyzing the effect of both the entrepreneurial and institutional contexts on this type of entrepreneurship.

Using North (1990, 2005) theoretical bases, as well as an OLS empirical strategy with nested models, we arrived at two key findings. The first result supports that the entrepreneurial environment approached through new business registered has a positive and significant effect on new forms of digital entrepreneurship such as subscribers and views from YouTube channels, thus strengthening the lack of literature in this way (Nambisan & Baron, 2021). This result is crucial because it confirms how important digital environments are, specifically entrepreneurial structures, and how they facilitate the emergence of new forms of digital entrepreneurship. It also serves to establish that there is a link between the digital world (digital entrepreneurship) and businesses as registered companies. There are several particular cases in this regard. For example, companies with some recognition that create YouTube channels to keep their customers informed.

The second result is fundamental for understanding not only the effect that institutions have on entrepreneurial activity, but also how they intervene in digital entrepreneurship. The economic freedom imposes a certain institutional spur that allows companies to develop in a favorable pro-market environment, where there are laws that protect them, large governments capable of reducing taxes, regulatory efficiency that allows monetary freedom, and open markets for free trade.

Some secondary results address the importance of the individual characteristics of YouTube channels, but also of the socioeconomic, cultural, and digital characteristics of the

countries where these channels are established. This leads us to think that digital entrepreneurship must be analyzed in conjunction with the environment that facilitates or hinders its development.

Theoretical implications

The results of this research allow us to establish theoretical implications about digital entrepreneurship (i.e., views and subscribers from YouTube channels) and its relationship to the entrepreneurial and pro-market environment. Four important theoretical implications are derived from our findings.

First, our findings enable us to extend the notion of entrepreneurial diversity (Welter et al., 2017). This research supports the ideas of Ashma et al. (2018) and Guñez-Cabrear and Aqueveque (2021), thus emphasizing YouTubers as digital entrepreneurs, who have an established market, access barriers, opportunities for joint ventures, among other aspects that facilitate or hinder entrepreneurial development. YouTubers, also called influencers or content creators, seek to entertain or inform a certain part of the population. Therefore, the channels are classified considering the type of content they possess. There are channels about animals, autos, comedy, education, entertainment, films, games, how-to, music, news, non-profits, people, sports, tech, travel, and undetermined. This type of digital entrepreneurship has been important in the context of the pandemic caused by covid-19, given that the lockdown has caused many psychological problems (Ahmed et al., 2020) and stress (Dong et al., 2021). However, through the entertainment provided by YouTube channels, people have been able to keep their minds occupied in moments of leisure. The variety of content on this platform facilitates the diversity of entertainment, so YouTubers must care about the quality of digital content they create.

Second, the environment in which YouTubers operate plays a fundamental role in explaining digital entrepreneurship (Stokel-Walker, 2019). YouTubers are content creators, people who must develop ideas to express them through a screen. This implies mental effort and dedication, which require favorable environments to develop high-quality content. Some environments can be hostile or favorable for a content creator. Some examples are the employment conditions (Kenney et al., 2019), the political environment (Carlson & Strandberg, 2008), the participatory culture (Chau, 2010; Wotanis & McMillan, 2014), among others. The importance of the environment on this type of digital entrepreneurship

20

can be appreciated in our research due to the significance of socioeconomic, cultural (language), connective, demographic, and institutional characteristics.

Third, the important role of pro-market environment in determining digital entrepreneurship ratifies the contribution to institutional theory (Napoli, 2014). The literature that studies the relationship between institutions and entrepreneurship is wide (Boettke & Coyne, 2009; Burns & Fuller, 2020). Yet, studies about the relationship between institutions and digital entrepreneurship are limited (Hansen, 2019; Zaheer et al., 2019). Even so, studies focused on the connection between institutions and digital entrepreneurship such as YouTube channels are almost null. In our research, we present the idea that pro-market environment through economic freedom discourages this type of digital entrepreneurship due to its effects over traditional entrepreneurship, as individuals prefer to create formally registered start-ups. Therefore, it is necessary the institutionalization of YouTubers (Kim, 2012) as digital entrepreneurs to generate forces that drive the development of YouTube channels for not only entertainment but also scientific content (Allgaier, 2020; Shapiro & Park, 2015). Thus, pro-market environment would favor both types of entrepreneurship. An example of this is how free-market ideas could facilitate digital entrepreneurship as YouTube channels (Pineda et al., 2019), even in countries like China (Li, 2009). Hence, at a theoretical level, this research opens the way for studies that may focus on observing the relationship between institutions and the creation, development, and success of YouTube channels.

Finally, an indirect substitution between digital entrepreneurship and traditional entrepreneurship is observed (Sahut et al., 2021). Some research proposes how entrepreneurs are taking advantage of digital opportunities (Hull et al., 2007). However, this seems to be generating a substitution between digital and traditional entrepreneurship (Bensaid & Azdimousa, 2021). This is exactly where institutions enter into scene, since an adequate institutional structure can transform this substitution into an interplay (Oppong et al., 2020). There are few examples in the literature of the role of institutions in this relationship, although some examples are the digital entrepreneurship ecosystem (Elia et al., 2020) and the effectiveness of structural factors (Nour-Mohammad, 2012). Elia et al. (2020) mention that through an adequate institutional structure, traditional entrepreneurship can be transformed into sustainable digital entrepreneurship, while Nour-Mohammad (2012) emphasizes the role of government institutions in driving traditional start-ups towards digital

21

ventures in the agricultural sector. Nonetheless, the role of institutions in the relationship between traditional entrepreneurship and digital entrepreneurship such as YouTube channels is still unexplored in the literature.

Policy implications

A major challenge of this research is to be able to make clear recommendations to policymakers, applicable to the policy framework of the countries. We believe our study allows policymakers direct policies towards four main areas.

First, accept, formalize, and regulate this type of digital entrepreneurship through formal procedures that provide transparency and support for content creators. A clear example of the functionality of this policy can be reflected in terms of security since YouTube channels can be exposed to cyber-attacks, thus, this policy would help reduce the communication between channel owners and the platform, in addition to providing cyber support.

Second, the literature studying the relationship between education and digital entrepreneurship such as YouTube channels is growing (Gil-Quintana et al., 2020; Yasaroglu & Boylu, 2020). However, among teachers, this practice is still not well regarded (Vizcaíno-Verdú et al., 2020). So, the task of policymakers should focus on working on the scientific public acceptance of YouTube educational channels, perhaps, by going further and encouraging highly qualified teachers to migrate teaching methods to these platforms.

Third, youth unemployment has become a problem for countries due to the dissatisfaction of young people with the barriers to access the labor market (Abzhan, 2020). Digital entrepreneurship as YouTube channels can be seen as an alternative for young people to undertake and lead different projects that help them earn some money (Duncum, 2011, 2014). However, it would be necessary a governmental effort to provide young population with the necessary tools to develop a suitable content idea that allows them to succeed. Therefore, access to internet, computers, advanced cameras, start-up subsidies, scholarships, and provision of psychological help may be some of the tools to support the entrepreneurial stage.

Finally, policymakers could provide advice to small, medium, and large companies to generate an approach to digital platforms, where their customers can have easy and quick

access to information about their products and services (Bonsón & Bednárová, 2015). Some YouTube channels of technology brands are a clear example of commercial expectation (Apple and Samsung). In addition, this might lead to connect young entrepreneurs with other companies as a way increase the YouTubers' market niche and improve advertising channels of established companies.

Limitations and future research lines

Although the results of this research are satisfactory, there is still a long way to go in digital entrepreneurship such as YouTube channels, and undoubtedly future lines of research emerge from the limitations observed in this paper. A first limitation refers to the impossibility of determining what factors are crucial to determine the success of YouTubers. This is because there is no individual information on YouTubers. We know the statistics of the channels, but there are also other socio-cultural factors at the individual level that can be decisive in determining the path of success or failure of a channel. A second limitation also stems from the impossibility of accessing information, since obtaining information over time from a large number of YouTubers is costly. However, some research can perform analyses of top channels from a specific region.

This research emphasized the importance of the individual characteristics of the channels, specifically their content. Thus, future research should investigate why some types of content are more pursued than others, whether it is due to the age of the population or simply personal tastes; these could be research questions to be solved. But undoubtedly, the broadest path to be explored is the one that studies the effects of institutions over YouTube channels. Also, future research could be directed to analyze the effect of formal and informal institutions, what kind of institutional barriers hinder the development of this digital entrepreneurship, and even more interesting is whether institutions can provide an adequate structure to spur new digital entrepreneurs to surf this new wave.

References

Abzhan, Z., Bekzhanova, T., Nukesheva, A., Abdurakhmanov, M., Aitkhozhina, L., & Bulkhairova, Z. (2020). Peculiarities of youth unemployment: A case study. *Entrepreneurship and Sustainability Issues*, *7*(4), 3438–3454.

Acs, Z. J., Audretsch, D. B., & Lehmann, E. E. (2013). The knowledge spillover theory of entrepreneurship. *Small Business Economics, 41*(4), 757-774.

Acs, Z. J., Braunerhjelm, P., Audretsch, D. B., & Carlsson, B. (2009). The knowledge spillover theory of entrepreneurship. *Small Business Economics, 32*(1), 15-30.

Acs, Z. J., Desai, S., & Hessels, J. (2008). Entrepreneurship, economic development and institutions. *Small Business Economics*, *31*(3), 219–234.

Aidis, R., Estrin, S., & Mickiewicz, T. (2008). Institutions and entrepreneurship development in Russia: A comparative perspective. *Journal of Business Venturing*, *23*(6), 656–672.

Ahmed, M. Z., Ahmed, O., Aibao, Z., Hanbin, S., Siyu, L., & Ahmad, A. (2020). Epidemic of COVID-19 in China and associated Psychological Problems. *Asian Journal of Psychiatry*, *51.*

Akaike, H. (1974). A New Look at the Statistical Model Identification. *IEEE Transactions on Automatic Control*, *19*(6), 716–723.

Akhter, F. (2017). Unlocking digital entrepreneurship through technical business process. *Entrepreneurship and Sustainability Issues*, *5*(1), 36–42.

Allen, M. P. (1997). *Testing hypotheses in nested regression models. In: Understanding Regression Analysis*. Springer, Boston, MA.

Allgaier, J. (2020). Science and Medicine on YouTube. In *Second International Handbook of Internet Research* (pp. 7–27). Springer Netherlands.

Aparicio, S., Urbano, D., & Audretsch, D. (2016). Institutional factors, opportunity entrepreneurship and economic growth: Panel data evidence. *Technological Forecasting and Social Change, 102*, 45–61.

Aparicio, S., Urbano, D., & Stenholm, P. (2021). Attracting the entrepreneurial potential: A multilevel institutional approach. *Technological Forecasting and Social Change*, *168*, 120748.

Arthurs, J., Drakopoulou, S., & Gandini, A. (2018). Researching YouTube. *Convergence, 24*(1), 3–15.

Ashman, R., Patterson, A., & Brown, S. (2018). 'Don't forget to like, share and subscribe': Digital autopreneurs in a neoliberal world. *Journal of Business Research*, *92*, 474–483.

Audretsch, D. B. (2007). *The entrepreneurial society*. Oxford: Oxford University Press.

Balocco, R., Cavallo, A., Ghezzi, A., & Berbegal-Mirabent, J. (2019). Lean business models change process in digital entrepreneurship. *Business Process Management Journal*, *25*(7), 1520–1542.

Bärtl, M. (2018). YouTube channels, uploads and views: A statistical analysis of the past 10 years. *Convergence*, *24*(1), 16–32.

Baumol, W. J. (199o). Entrepreneurship: Productive, unproductive, and destructive. *Journal of Political Economy*, *98*(5), 893–921.

Bennett, D. L., & Nikolaev, B. (2019). Economic freedom, public policy, and entrepreneurship. In J. Gwartney, R. Lawson, J. Hall, & R. Murphy (Eds.), *Economic Freedom of the World: 2019 edition* (pp. 199–224). Fraser Institute.

Bensaid, W., & Azdimousa, H. (2021). Digital entrepreneurship vs. Traditional entrepreneurship: the setting up of a global conceptual model. *International Journal of Economic Studies and Management (IJESM)*, *1*(1), 86-92.

Berger, E. S. C., von Briel, F., Davidsson, P., & Kuckertz, A. (2021). Digital or not – The future of entrepreneurship and innovation: Introduction to the special issue. *Journal of Business Research*. Online, doi: https://doi.org/10.1016/j.jbusres.2019.12.020

Bican, P. M., & Brem, A. (2020). Digital Business Model, Digital Transformation, Digital Entrepreneurship: Is there a sustainable "digital"? *Sustainability, 12*(13), 12135239.

Bjørnskov, C., & Foss, N. J. (2016). Institutions, entrepreneurship, and economic growth: what do we know and what do we still need to know? *The Academy of Management Perspectives, 30*(3), 292–315.

Boettke, P. J., & Coyne, C. J. (2009). Context Matters: Institutions and Entrepreneurship. *Foundations and Trends in Entrepreneurship*, *5*(3), 135–209.

Bonsón, E., & Bednárová, M. (2015). Youtube sustainability reporting: Empirical evidence from eurozone-listed companies. *Journal of Information Systems, 29*(3), 35–50.

Bosma, N., Content, J., Sanders, M., & Stam, E. (2018). Institutions, entrepreneurship, and economic growth in Europe. *Small Business Economics*, *51*(2), 483–499.

Bruton, G. D., Ahlstrom, D., & Li, H.-L. (2010). Institutional theory and entrepreneurship: where are we now and where do we need to move in the future? *Entrepreneurship Theory and Practice, 34*(3), 421–440.

Budzinski, O., & Gaenssle, S. (2018). The economics of social media (super-)stars: an empirical investigation of stardom and success on YouTube. *Journal of Media Economics*, *31*(3–4), 75–95.

Burns, S., & Fuller, C. S. (2020). Institutions and entrepreneurship: Pushing the boundaries. *Quarterly Journal of Austrian Economics*, *23*(3–4), 568–612.

Butler, J. S., Garg, R., & Stephens, B. (2020). Social networks, funding, and regional advantages in technology entrepreneurship: an empirical analysis. *Information Systems Research*, *31*(1), 198-216.

Capelleras, J. L., Contin-Pilart, I., Larraza-Kintana, M., & Martin-Sanchez, V. (2019). Entrepreneurs' human capital and growth aspirations: The moderating role of regional entrepreneurial culture. *Small Business Economics, 52*(1), 3-25.

Carlson, T., & Strandberg, K. (2008). Riding the web 2.0 wave: Candidates on youtube in the 2007 Finnish national elections. Journal of Information Technology and Politics, 5(2), 159–174.

Chau, C. (2010). YouTube as a participatory culture. *New Directions for Youth Development, 2010*(128), 65–74.

Chowdhury, F., Audretsch, D. B., & Belitski, M. (2019). Institutions and Entrepreneurship Quality. *Entrepreneurship: Theory and Practice*, *43*(1), 51–81.

Cuervo-Cazurra, A., Gaur, A., & Singh, D. (2019). Pro-market institutions and global strategy: the pendulum of pro-market reforms and reversals. *Journal of International Business Studies, 50*(4), 598–632.

Dodge, Y. (2008). *The Concise Encyclopedia of Statistics*. Cham: Springer.

Dong, F., Liu, H. liang, Dai, N., Yang, M., & Liu, J. ping. (2021). A living systematic review of the psychological problems in people suffering from COVID-19. *Journal of Affective Disorders, 292*, 172-188.

Duncum, P. (2011). Youth on YouTube: Prosumers in a Peer-to-Peer Participatory Culture. *International Journal of Arts Education*, *9*(2), 24–39. Retrieved from http://ed.arte.gov.tw/uploadfile/periodical/3052_9-2-p.24-39.pdf

Duncum, P. (2014). Youth on YouTube as Smart Swarms. *Art Education*, *67*(2), 32–36.

Elia, G., Margherita, A., & Passiante, G. (2020). Digital entrepreneurship ecosystem: How digital technologies and collective intelligence are reshaping the entrepreneurial process. *Technological Forecasting and Social Change, 150*.

Estrin, S., Korosteleva, J., & Mickiewicz, T. (2013). Which institutions encourage entrepreneurial growth aspirations? *Journal of Business Venturing, 28*(4), 564–580.

European Commission (2015). Digital transformation of European industry and enterprises: a report of the strategic policy forum on digital entrepreneurship. available from: https://ec.europa.eu/growth/industry/policy/advanced-technologies/strategic-policy-forum-digital-entrepreneurship_en

Everitt, B. S, & Skrondal, A. (2010). *The Cambridge Dictionary of Statistics*. Cambridge University Press.

Fischer, E., & Reuber, A. R. (2011). Social interaction via new social media:(How) can interactions on Twitter affect effectual thinking and behavior? *Journal of Business Venturing, 26*(1), 1-18.

Foster, J. (2021). "My Money and My Heart": Buying a Birkin and Boundary Work Online. Communication, Culture and Critique. https://doi.org/10.1093/ccc/tcab033

France, S. L., Vaghefi, M. S., & Zhao, H. (2016). Characterizing viral videos: Methodology and applications. *Electronic Commerce Research and Applications, 19*, 19–32.

Franco, M., Godinho, L., & Rodrigues, M. (2021). Exploring the influence of digital entrepreneurship on SME digitalization and management. *Small Enterprise Research*. Online first, doi: https://doi.org/10.1080/13215906.2021.1938651

Fyfield, M., Henderson, M., & Phillips, M. (2021). Navigating four billion videos: teacher search strategies and the YouTube algorithm. *Learning, Media and Technology, 46*(1), 47–59.

Gannon, V., & Prothero, A. (2018). Beauty bloggers and YouTubers as a community of practice. *Journal of Marketing Management, 34*(7–8), 592–619.

Gardner, J., & Lehnert, K. (2016). What's new about new media? How multi-channel networks work with content creators. *Business Horizons, 59*(3), 293–302.

Gil-Quintana, J., Malvasi, V., Castillo-Abdul, B., & Romero-Rodríguez, L. M. (2020). Learning leaders: Teachers or youtubers? Participatory culture and STEM competencies in Italian secondary school students. *Sustainability, 12*(18).

Geissinger, A., Laurell, C., Sandström, C., Eriksson, K., & Nykvist, R. (2019). Digital entrepreneurship and field conditions for institutional change– Investigating the enabling role of cities. *Technological Forecasting and Social Change, 146*, 877–886.

Ghatak, A., Chatterjee, S., & Bhowmick, B. (2020). Intention Towards Digital Social Entrepreneurship: An Integrated Model. *Journal of Social Entrepreneurship.* Online first, doi: https://doi.org/10.1080/19420676.2020.1826563

Ghezzi, A., & Cavallo, A. (2020). Agile Business Model Innovation in Digital Entrepreneurship: Lean Startup Approaches. *Journal of Business Research, 110*, 519–537.

Guiñez-Cabrera, N., & Aqueveque, C. (2021). Entrepreneurial influencers and influential entrepreneurs: two sides of the same coin. *International Journal of Entrepreneurial Behavior & Research.* Online first, doi: https://doi.org/10.1108/IJEBR-08-2020-0563

Hair, J. F. J., Anderson, R. E., Tatham, R. L., & Black, W. C. (1995). *Multivariate Data Analysis* (3rd Edition). New York: Macmillan.

Hansen, B. (2019). The digital revolution – digital entrepreneurship and transformation in Beijing. *Small Enterprise Research, 26*(1), 36–54.

Hechavarría, D. M., Terjesen, S. A., Stenholm, P., Brännback, M., & Lång, S. (2018). More than words: do gendered linguistic structures widen the gender gap in entrepreneurial activity?. *Entrepreneurship Theory and Practice, 42*(5), 797-817.

Hoiles, W., Aprem, A., & Krishnamurthy, V. (2017). Engagement and Popularity Dynamics of YouTube Videos and Sensitivity to Meta-Data. *IEEE Transactions on Knowledge and Data Engineering, 29*(7), 1426–1437.

Hsieh, Y. J., & Wu, Y. J. (2019). Entrepreneurship through the platform strategy in the digital era: Insights and research opportunities. *Computers in Human Behavior, 95*, 315–323.

Hull, C. E., Hung, Y. T. C., Hair, N., Perotti, V., & Demartino, R. (2007). Taking advantage of digital opportunities: A typology of digital entrepreneurship. International Journal of Networking and Virtual Organisations, 4(3), 290–303.

Ibáñez, M. J., Guerrero, M., Yáñez-Valdés, C., & Barros-Celume, S. (2021). Digital social entrepreneurship: the N-Helix response to stakeholders' COVID-19 needs. *Journal of Technology Transfer.* Online first, doi: https://doi.org/10.1007/s10961-021-09855-4

Jawad, M., Naz, M., & Maroof, Z. (2021). Era of digital revolution: Digital entrepreneurship and digital transformation in emerging economies. *Business Strategy and Development, 4*(3), 220-228.

Jung, C., & Nüesch, S. (2019). The more others care, the more you share?–Social contagion as a stardom trigger of social media superstars. *Applied Economics, 51*(9), 881–888.

Kenney, M., Rouvinen, P., & Zysman, J. (2019). Employment, Work, and Value Creation in the Era of Digital Platforms. In *Digital Work and the Platform Economy* (pp. 13–30). Routledge.

Kim, J. (2012). The institutionalization of youtube: From user-generated content to professionally generated content. *Media, Culture and Society, 34*(1), 53–67.

Khan, G. F., & Vong, S. (2014). Virality over youtube: An empirical analysis. *Internet Research, 24*(5), 629–647.

Klobas, J. E., McGill, T. J., Moghavvemi, S., & Paramanathan, T. (2018). Compulsive YouTube usage: A comparison of use motivation and personality effects. *Computers in Human Behavior, 87*, 129–139.

Kopf, S. (2020). "Rewarding Good Creators": Corporate Social Media Discourse on Monetization Schemes for Content Creators. *Social Media and Society, 6*(4).

Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. *International Journal of Entrepreneurial Behaviour and Research, 25*(2), 353-375.

Krueger Jr, N. F., & Brazeal, D. V. (1994). Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship Theory and Practice, 18*(3), 91-104.

Lazakidou, A., & Pournaras, E. (2008). Trust and innovativeness in virtual organisations. *International Journal of Business Innovation and Research, 2*(3), 262–274.

Le Dinh, T., Vu, M. C., & Ayayi, A. (2018). Towards a living lab for promoting the digital entrepreneurship process. *International Journal of Entrepreneurship, 22*(1), 1-17.

Li, H. S. (2009). The turn to the self: From "Big Character Posters" to YouTube videos. *Chinese Journal of Communication, 2*(1), 50–60.

29

Liikkanen, L. A., & Salovaara, A. (2015). Music on YouTube: User engagement with traditional, user-appropriated and derivative videos. *Computers in Human Behavior, 50,* 108–124.

Lobato, R. (2016). The cultural logic of digital intermediaries: YouTube multichannel networks. *Convergence, 22*(4), 348-360.

Mardon, R., Molesworth, M., & Grigore, G. (2018). YouTube Beauty Gurus and the emotional labour of tribal entrepreneurship. *Journal of Business Research, 92,* 443–454.

McAdam, M., Crowley, C., & Harrison, R. T. (2019). "To boldly go where no [man] has gone before" - Institutional voids and the development of women's digital entrepreneurship. *Technological Forecasting and Social Change, 146,* 912–922.

Nambisan, S. (2017). Digital Entrepreneurship: Toward a Digital Technology Perspective of Entrepreneurship. *Entrepreneurship Theory and Practice, 41*(6), 1029–1055.

Nambisan, S., & Baron, R. A. (2021). On the costs of digital entrepreneurship: Role conflict, stress, and venture performance in digital platform-based ecosystems. *Journal of Business Research, 125,* 520–532.

Nambisan, S., Wright, M., & Feldman, M. (2019). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. *Research Policy, 48*(8), 103773.

Napoli, P. M. (2014). Automated media: An institutional theory perspective on algorithmic media production and consumption. *Communication Theory, 24*(3), 340–360.

Ngoasong, M. Z. (2018). Digital entrepreneurship in a resource-scarce context. *Journal of Small Business and Enterprise Development, 25*(3), 483–500.

North, D. C. (1990). *Institutions, institutional change and economic performance.* Cambridge: Cambridge University Press.

North, D. C. (2005). *Understanding the process of economic change.* Princeton: Princeton University Press.

Nour-Mohammad Yaghoubi. (2012). Identification of the effective structural factors on creating and developing digital entrepreneurship in agricultural sector. AFRICAN *Journal of Agricultural Research, 7*(6).

O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality and Quantity, 41*(5), 673–690.

Oppong, G. Y. S., Singh, S., & Kujur, F. (2020). Potential of digital technologies in academic entrepreneurship – a study. *International Journal of Entrepreneurial Behaviour and Research, 26*(7), 1449–1476.

Pano, N., & Gjika, I. (2020). Fostering students entrepreneurship through digital platforms. *Universal Journal of Educational Research*, *8*(7), 3179–3188.

Pahnke, A., & Welter, F. (2019). The German Mittelstand: antithesis to Silicon Valley entrepreneurship? *Small Business Economics, 52*(2), 345-358.

Pineda, A., Hernández-Santaolalla, V., Algaba, C., & Romero, A. I. B. (2019). The politics of think tanks in social media: FAES, youtube and free-market ideology. International *Journal of Media and Cultural Politics, 15*(1), 3–26.

Proksch, D., Rosin, A. F., Stubner, S., & Pinkwart, A. (2021). The influence of a digital strategy on the digitalization of new ventures: The mediating effect of digital capabilities and a digital culture. *Journal of Small Business Management.* Online first, doi: https://doi.org/10.1080/00472778.2021.1883036

Reuber, A. R., & Fischer, E. (2021). Annual review article: Relying on the engagement of others: A review of the governance choices facing social media platform start-ups. *International Small Business Journal.* https://doi.org/10.1177/02662426211050509

Sahut, J. M., Iandoli, L., & Teulon, F. (2021). The age of digital entrepreneurship. *Small Business Economics, 56*(3), 1159–1169.

Satalkina, L., & Steiner, G. (2020). Digital entrepreneurship and its role in innovation systems: A systematic literature review as a basis for future research avenues for sustainable transitions. *Sustainability, 12*(7), 2764.

Saurabh, S., & Gautam, S. (2019). Modelling and statistical analysis of YouTube's educational videos: A channel Owner's perspective. *Computers and Education, 128*, 145–158.

Secundo, G., Rippa, P., & Meoli, M. (2020). Digital transformation in entrepreneurship education centres: preliminary evidence from the Italian Contamination Labs network. *International Journal of Entrepreneurial Behaviour and Research*, *26*(7), 1589–1605.

Shapiro, M. A., & Park, H. W. (2015). More than entertainment: YouTube and public responses to the science of global warming and climate change. Social Science Information, 54(1), 115–145.

Soluk, J., Kammerlander, N., & Darwin, S. (2021). Digital entrepreneurship in developing countries: The role of institutional voids. *Technological Forecasting and Social Change, 170*, 120876.

Steininger, D. M. (2019). Linking information systems and entrepreneurship: A review and agenda for IT-associated and digital entrepreneurship research. *Information Systems Journal, 29*(2), 363–407.

Stokel-Walker, C. (2019). The dark psychology behind YouTube's success. New Scientist, 242(3227), 42–43.

Tan, L., Ng, S. H., Omar, A., & Karupaiah, T. (2018). What's on YouTube? A Case Study on Food and Beverage Advertising in Videos Targeted at Children on Social Media. *Childhood Obesity, 14*(5), 280–290.

Tafesse, W. (2020). YouTube marketing: how marketers' video optimization practices influence video views. *Internet Research, 30*(6), 1689–1707.

Thornton, P. H., Ribeiro-Soriano, D., & Urbano, D. (2011). Socio-cultural factors and entrepreneurial activity: an overview. *International Small Business Journal, 29*(2), 105–118.

Thurik, A. R., Stam, E., & Audretsch, D. B. (2013). The rise of the entrepreneurial economy and the future of dynamic capitalism. *Technovation, 33*(8-9), 302-310.

Törhönen, M., Giertz, J., Weiger, W. H., & Hamari, J. (2021). Streamers: The new wave of digital entreprenurship? Extant corpus and future research agenda. *Electronic Commerce Research and Applications, 46.*

Tüzemen, A. (2020). Which youtuber should be followed? A comparison based DELPHI-AHP-TOPSIS. *International Journal of Contemporary Economics and Administrative Sciences, 10*(2), 451–467.

Udimal, T. B., Luo, M., Liu, E., & Mensah, N. O. (2020). How has formal institutions influenced opportunity and necessity entrepreneurship? The case of brics economies. *Heliyon, 6*(9).

Urbano, D., Aparicio, S., & Audretsch, D. (2019). Twenty-five years of research on institutions, entrepreneurship, and economic growth: what has been learned? *Small Business Economics*, *53*(1), 21–49.

Vizcaíno-Verdú, A., De-Casas-moreno, P., & Contreras-Pulido, P. (2020). Scientific dissemination on youtube and its reliability for university professors. *Educacion XX1*, *23*(2), 283–306.

Vonderau, P. (2016). The video bubble: Multichannel networks and the transformation of YouTube. *Convergence, 22*(4), 361-375.

Vorbach, S., Maria Poandl, E., & Korajman, I. (2019). Digital entrepreneurship education: The role of MOOCs. *International Journal of Engineering Pedagogy*, *9*(3), 99–111.

Wang, R., & Chan-Olmsted, S. (2020). Content marketing strategy of branded YouTube channels. *Journal of Media Business Studies, 17*(3-4), 294–316.

Welbourne, D. J., & Grant, W. J. (2016). Science communication on YouTube: Factors that affect channel and video popularity. *Public Understanding of Science*, *25*(6), 706–718.

Welter, F. (2011). Contextualizing entrepreneurship—conceptual challenges and ways forward. *Entrepreneurship Theory and Practice, 35*(1), 165-184.

Welter, F., Baker, T., Audretsch, D. B., & Gartner, W. B. (2017). Everyday Entrepreneurship—A Call for Entrepreneurship Research to Embrace Entrepreneurial Diversity. *Entrepreneurship Theory and Practice, 41*(3), 311–321.

Wotanis, L., & McMillan, L. (2014). Performing Gender on YouTube. Feminist Media Studies, 14(6), 912–928.

Yasaroglu, C., & Boylu, M. A. (2020). Youtubers' Effect on Children's Values: Parents' Views. *European Journal of Educational Sciences*, *07*(04).

Zaheer, H., Breyer, Y., & Dumay, J. (2019). Digital entrepreneurship: An interdisciplinary structured literature review and research agenda. *Technological Forecasting and Social Change, 148*, 119735.

Zhou, R., Khemmarat, S., Gao, L., Wan, J., & Zhang, J. (2016). How YouTube videos are discovered and its impact on video views. *Multimedia Tools and Applications*, *75*(10), 6035–6058.

Tables

Table 1. Descriptive statistics

Variables	Mean	SD	Min	Max	P25	P50	P75	P99	N*
Subscribers**	0.940	3.200	0.000	190.000	0.016	0.099	0.630	13.000	48
Views**	320.000	1800.000	0.000	160000.000	2.000	18.000	120.000	5400.000	48
Entrepreneurial environment*	43.000	89.000	0.163	660.000	5.527	15.000	37.000	660.000	37
Pro-market environment	64.735	10.207	5.200	89.700	58.600	65.700	72.300	83.900	44
Uploads	1.243	8.153	0.000	620*	0.048	0.164	0.522	21.000	48
Animals	0.005	0.071	0.000	1.000	0.000	0.000	0.000	0.000	48
Autos	0.011	0.105	0.000	1.000	0.000	0.000	0.000	1.000	48
Comedy	0.034	0.182	0.000	1.000	0.000	0.000	0.000	1.000	48
Education	0.043	0.202	0.000	1.000	0.000	0.000	0.000	1.000	48
Entertainment	0.170	0.375	0.000	1.000	0.000	0.000	0.000	1.000	48
Film	0.045	0.207	0.000	1.000	0.000	0.000	0.000	1.000	48
Games	0.099	0.299	0.000	1.000	0.000	0.000	0.000	1.000	48
How-to	0.042	0.200	0.000	1.000	0.000	0.000	0.000	1.000	48
Music	0.159	0.365	0.000	1.000	0.000	0.000	0.000	1.000	48
News	0.029	0.168	0.000	1.000	0.000	0.000	0.000	1.000	48
Nonprofit	0.006	0.080	0.000	1.000	0.000	0.000	0.000	0.000	48
People	0.147	0.354	0.000	1.000	0.000	0.000	0.000	1.000	48
Sports	0.024	0.153	0.000	1.000	0.000	0.000	0.000	1.000	48
Tech	0.018	0.133	0.000	1.000	0.000	0.000	0.000	1.000	48
Travel	0.010	0.098	0.000	1.000	0.000	0.000	0.000	0.000	48
Undetermined	0.158	0.365	0.000	1.000	0.000	0.000	0.000	1.000	48
Old channel	0.165	0.371	0.000	1.000	0.000	0.000	0.000	1.000	48
Established channel	0.444	0.497	0.000	1.000	0.000	0.000	1.000	1.000	48
New channel	0.391	0.488	0.000	1.000	0.000	0.000	1.000	1.000	48
Population (in urban agglomerations)	26.800	15.039	4.028	76.858	16.208	23.191	35.308	76.858	37
Population 0-14	23.898	9.634	12.697	46.931	15.996	20.608	28.029	46.931	46
Population 15-64	64.649	5.691	50.975	85.089	63.489	64.993	67.411	85.089	46
Population 65-above	11.453	6.761	1.085	27.576	5.247	11.254	18.346	27.576	46
Mobile cellular subscriptions*	66.000	210.000	0.038	1600.000	5.200	12.000	51.000	1600.000	47
Individuals using the Internet	66.738	24.730	2.661	99.653	52.540	73.361	84.588	99.653	47
GDP per capita (PPP)*	28.000	23.000	0.762	110.000	11.000	20.000	42.000	110.000	46
Labor force**	29.000	96.000	0.210	780.000	2.400	5.400	20.000	780.000	46
Unemployment	7.042	4.849	0.110	26.920	3.830	5.585	9.078	26.920	46
Education	9.512	2.879	1.600	14.100	7.700	9.800	12.100	14.100	46
Chinese	0.021	0.142	0.000	1.000	0.000	0.000	0.000	1.000	48
English	0.113	0.317	0.000	1.000	0.000	0.000	0.000	1.000	48
French	0.049	0.217	0.000	1.000	0.000	0.000	0.000	1.000	48
German	0.040	0.195	0.000	1.000	0.000	0.000	0.000	1.000	48
Spanish	0.180	0.384	0.000	1.000	0.000	0.000	0.000	1.000	48

Note: N is equal to the number of observations; *: values in thousands; **: values in millions.

Table 2. Effects on digital entrepreneurship

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Views	Views	Views	Views	Views	Views	Subs	Subs	Subs	Subs	Subs	Subs
Entrepreneurial environment	0.177***	0.176***	0.170***	0.103***	0.104***	0.105***	0.292***	0.291***	0.282***	0.178***	0.180***	0.182***
	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)
Pro-market environment	-0.005***	-0.006***	-0.007***	-0.001	-0.002**	-0.002**	-0.010***	-0.010***	-0.013***	-0.004***	-0.005***	-0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.286***	0.263***	0.494***	0.132**	0.193***	0.193***	0.613***	0.596***	0.888***	0.345***	0.441***	0.420***
	(0.043)	(0.042)	(0.060)	(0.041)	(0.040)	(0.041)	(0.046)	(0.046)	(0.062)	(0.049)	(0.047)	(0.049)
Activity FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Channel topics FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Longevity FE	NO	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES
Demography FE	NO	NO	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES
Connectivity FE	NO	NO	NO	YES	YES	YES	NO	NO	NO	YES	YES	YES
Economic and social FE	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES	YES
Language FE	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	YES
Observations	35432	35432	27245	27245	27245	27245	35432	35432	27245	27245	27245	27245
R-squared	0.078	0.079	0.085	0.146	0.150	0.150	0.155	0.155	0.172	0.312	0.332	0.332
AIC	87981	87943	74378	72497	72365	72372	86592	86584	72437	67406	66620	66618
BIC	88142	88121	74575	72710	72611	72651	86753	86762	72634	67619	66867	66897

Note: Standard errors in parentheses: * p<0.05; ** p<0.01; *** p<0.001. Activity fixed effects variables: Activity [uploads]. Channel topics fixed effects variables: animals, autos, comedy, education, entertainment, films, games, how-to, music, news, nonprofits, people, sports, tech, travel, and undetermined. Longevity fixed effects variables: old channel, stablished channel, and new channel. Demography fixed effects variables: Population [in urban agglomerations, by age 0-14, 15-64, and 65-above]. Connectivity fixed effects variables: Mobile cellular subscriptions and individual using internet. Economic and social fixed effects variables: GDP per capita [PPP], labor force, unemployment, and education. Language fixed effects variables: dummy for countries speaking English, Chinese, French, Spanish and German.

Table 3. Results with business freedom as a pro-market environment

	(1) Views	(2) Views	(3) Views	(4) Views	(5) Views	(6) Views	(7) Subs	(8) Subs	(9) Subs	(10) Subs	(11) Subs	(12) Subs
Entrepreneurial environment	0.174***	0.173***	0.169***	0.109***	0.108***	0.109***	0.289***	0.289***	0.287***	0.192***	0.191***	0.192***
	(0.008)	(0.008)	(0.008)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Pro-market environment	-0.000	-0.000	0.000	-0.004***	-0.003***	-0.003***	-0.001***	-0.001***	-0.003***	-0.010***	-0.007***	-0.007***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-0.074**	-0.099***	0.035	0.339***	0.270***	0.287***	0.009	-0.003	0.243***	0.759***	0.613***	0.606***
	(0.023)	(0.024)	(0.050)	(0.044)	(0.042)	(0.046)	(0.033)	(0.033)	(0.063)	(0.055)	(0.051)	(0.055)
Activity FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Channel topics FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Longevity FE	NO	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES
Demography FE	NO	NO	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES
Connectivity FE	NO	NO	NO	YES	YES	YES	NO	NO	NO	YES	YES	YES
Economic and social FE	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES	YES
Language FE	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	YES
Observations	35432	35432	27245	27245	27245	27245	35432	35432	27245	27245	27245	27245
R-squared	0.075	0.076	0.082	0.147	0.150	0.150	0.145	0.145	0.163	0.316	0.333	0.333
AIC	88091	88065	74461	72471	72357	72363	87015	87015	72730	67235	66558	66564
BIC	88252	88243	74658	72684	72603	72643	87176	87193	72927	67449	66805	66844

Note: Standard errors in parentheses: * p<0.05; ** p<0.01; *** p<0.001. Activity fixed effects variables: Activity [uploads]. Channel topics fixed effects variables: animals, autos, comedy, education, entertainment, films, games, how-to, music, news, nonprofits, people, sports, tech, travel, and undetermined. Longevity fixed effects variables: old channel, established channel, and new channel. Demography fixed effects variables: Population [in urban agglomerations, by age 0-14, 15-64, and 65-above]. Connectivity fixed effects variables: Mobile cellular subscriptions and individuals using the internet. Economic and social fixed effects variables: GDP per capita [PPP], labor force, unemployment, and education. Language fixed effects variables: dummy for countries speaking English, Chinese, French, Spanish, and German.

Table 4. Results with minimum capital as substitute of pro-market environment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Views	Views	Views	Views	Views	Views	Subs	Subs	Subs	Subs	Subs	Subs
Entrepreneurial environment	0.171***	0.170***	0.166***	0.104***	0.105***	0.107***	0.281***	0.281***	0.279***	0.185***	0.185***	0.189***
	(0.008)	(0.007)	(0.008)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)
Minimum capital	-0.014***	-0.016***	0.006	0.014***	0.016***	0.017***	-0.030***	-0.031***	0.022***	0.034***	0.042***	0.044***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)	(0.004)	(0.004)
Constant	-0.070***	-0.028	-0.109***	-0.118***	-0.097***	-0.093***	-0.083***	-0.077**	-0.057	-0.070*	-0.015	-0.015
	(0.014)	(0.019)	(0.021)	(0.021)	(0.021)	(0.021)	(0.023)	(0.026)	(0.032)	(0.029)	(0.029)	(0.029)
Activity FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Channel topics FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Longevity FE	NO	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES
Demography FE	NO	NO	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES
Connectivity FE	NO	NO	NO	YES	YES	YES	NO	NO	NO	YES	YES	YES
Economic and social FE	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES	YES
Language FE	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	YES
Observations	37351	37351	28740	28740	28740	28740	37351	37351	28740	28740	28740	28740
R-squared	0.075	0.076	0.078	0.146	0.150	0.151	0.146	0.146	0.156	0.310	0.330	0.331
AIC	91584	91549	77643	75449	75313	75319	90204	90203	75785	70021	69153	69149
BIC	91746	91728	77841	75664	75561	75600	90366	90382	75984	70236	69401	69430

Note: Standard errors in parentheses: * p<0.05; ** p<0.01; *** p<0.001. Activity fixed effects variables: Activity [uploads]. Channel topics fixed effects variables: animals, autos, comedy, education, entertainment, films, games, how-to, music, news, nonprofits, people, sports, tech, travel, and undetermined. Longevity fixed effects variables: old channel, established channel, and new channel. Demography fixed effects variables: Population [in urban agglomerations, by age 0-14, 15-64, and 65-above]. Connectivity fixed effects variables: Mobile cellular subscriptions and individuals using the internet. Economic and social fixed effects variables: GDP per capita [PPP], labor force, unemployment, and education. Language fixed effects variables: dummy for countries speaking English, Chinese, French, Spanish, and German.