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# City-level institutions and perceived entrepreneurial ecosystem's growth orientation

David Audretsch[a,b], Maksim Belitski[c,d], Georg Maximilian Eichler[b], Tomasz Mickiewicz[e] and Erich Schwarz[b]

**ABSTRACT**

This study uses both secondary and primary data on perceptions of 1789 ecosystem actors from 17 cities in Europe to perform an empirical analysis of three institutional dimensions: regulatory, cultural values and socio-cultural practices – and tests their association with the entrepreneurial ecosystem's growth orientation. As a result, we develop a framework for the entrepreneurial ecosystem's factors and provide policy recommendations for those interested in supporting the entrepreneurial ecosystem's growth orientation in cities. Among other conclusions, the findings suggest a positive association between the socio-cultural practices of environmental sustainability behaviour in businesses with entrepreneurial ecosystem's growth orientation.

**KEYWORDS**

entrepreneurial ecosystem; institutional theory; city; regulation; environmentalism; sustainability; growth; Cluj

**JEL** L26, O18, Q56, R11

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## 1. INTRODUCTION

In order to understand and promote entrepreneurial activity, researchers and policymakers have embraced the concept of the entrepreneurial ecosystem (EE)[1] (Audretsch & Belitski, 2017; Cavallo et al., 2019; Coad & Srhoj, 2023; Spigel, 2017; Stam, 2015), with the focus on EEs in Europe and North America. A plethora of empirical evidence and detailed studies have confirmed the positive impact of aspects of EE on entrepreneurship, as well as the contribution that entrepreneurial activity makes to economic development (Content et al., 2020). Scholars have developed a number of different EE frameworks to explain heterogeneity in entrepreneurship activity (Bradley et al., 2021), with the focus shifting from measuring the quantity of entrepreneurship and the density of small and medium-sized firms toward the growth dynamics of young firms (Cavallo et al., 2019; Guzman & Stern, 2020). Consistent with this, a stream of research focuses on 'impactful' entrepreneurship, which is associated with high entrepreneurial performance and interpreted as having the high growth orientation. This approach is exemplified by two seminal papers by Autio et al. (2013) and Estrin et al. (2013a).[2] Both highlight the role of institutions in supporting the high growth aspirations of new ventures.

In a similar vein, drawing on Guzman and Stern (2020), we posit that the growth-oriented entrepreneurs formally registering businesses in a specific geographical location (as a corporation, partnership, limited liability company, etc.), aiming at dynamic entrepreneurship outcomes and at creating jobs, contribute to EE quality by enhancing its growth orientation.[3]

More generally, we build on the increasing recognition of the relationship between institutions and city entrepreneurship ecosystem (EE) quality and its growth orientation (Guzman & Stern, 2020; Lamine et al., 2021; Szerb et al., 2019), as our analysis focuses on the entrepreneurial ecosystem within the city, which is the central geographical unit of analysis. We define EE's growth orientation as the EE capacity of a place (city) and the tendency to foster high-growth ventures and create societal

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value and jobs. While focusing on institutions that support EE growth orientation outcomes within a city, we consider three dimensions: regulation, cultural norms and socio-cultural practices. With relation to the third dimension, new ventures have been increasingly seen as connected with local governments, incumbent businesses, local communities[4] and members of the public in cities, and entrepreneurial activities are seen as contributing to resolving societal challenges and issues. Entrepreneurial orientation toward social values is also a response to the demands of EE actors (e.g., government, suppliers, customers) for more socially orientated businesses, but the degree of this phenomenon will vary across cities and with the economic development level of cities and countries where these cities are located. However, there is a paucity of knowledge on whether and how the prosocial practices of the entrepreneurs increase the city's EE growth orientation. These questions are not trivial, as the growth and social orientation of entrepreneurs could be seen as contradictory.

We argue that there is a gap in institutional theory and entrepreneurship research related to understanding the impact on city's EE growth orientation of the socio-cultural dimension of institutions, including the social norms describing how entrepreneurs respond to societal challenges by engaging with local communities and creating societal benefits for cities. Here, we define engagement with local communities by entrepreneurs as engagement with customers and other stakeholders such as suppliers, government and incumbents within a specific common location. Engagement with communities is often organised by common norms and is associated with social cohesion and trust within a shared geographical location such as a city.

Therefore, the purpose of this study is to investigate the role of institutions, and in particular the specific elements of the businesses' socio-cultural practices (social norms) in enhancing the city's EE growth orientation. Thus, we posit that city's EE growth orientation builds on the institutional characteristics of a place, which has specific geographical boundaries (in our case, city boundaries of Cluj, Warsaw, Zagreb, Sophia, Istanbul, Almaty and other). Entrepreneurs' activities reflect broader social norms and objectives, which entrepreneurs follow by serving local communities that is their activities are affected by the specific geographical context. This includes an important topic of social entrepreneurship. Lyons and Roundy (2023) made it central to their analysis proposing the concept of 'social entrepreneurship ecosystem'.

Drawing on these premises, our study extends prior literature on institutions and growth-oriented entrepreneurship (Autio et al., 2013; Estrin et al., 2013a). First, we conceptualise the socio-cultural dimension based on Stephan et al. (2015) and the Global Leadership and Organizational Behavior Effectiveness (GLOBE) project (Javidan et al., 2006). We propose to focus on the specific content of this dimension of ecosystem's institutions, related to (emerging) social norms of environmentalism and sustainability (Demirel et al., 2019). We introduce it within a multidimensional framework of an institutional arrangements model, to explain how these sustainability-oriented socio-cultural norms (practices) of entrepreneurs lead to enhancement in a city's EE growth orientation. Second, in contrast to the extant literature which focuses mostly on developed countries (Content et al., 2020; Spigel, 2017; Stam & Spigel, 2016; Szerb et al., 2019), this study considers the contexts of both middle-income and developing countries, to demonstrate how entrepreneurial engagement in socio-cultural practices related to social and environment objectives (Autio et al., 2013) enhances city's EE quality. Third, most research on EE focuses either on the country level (Bernardez & Mead, 2009), or on the regional context (Content et al., 2020; Knox & Arshed, 2022; Stam, 2015), with the paucity of knowledge about EE in cities (Audretsch & Belitski, 2017; Shilon et al., 2022; Stojčić et al., 2022), despite the longstanding tradition emphasising the importance of the city context for entrepreneurship (Guzman & Stern, 2020) as cities are seen as 'entrepreneurial hotspots' (Tavassoli et al., 2021).

The remainder of this paper is set out as follows. Section 2 outlines the conceptual framework and hypotheses. Section 3 presents the data and outlines the methodology. Section 4 offers the empirical analysis: first, the aggregate, city-level associations between a concise measure of our institutional dimensions and the growth orientation of EE in cities, and next the regression results oriented on testing the hypotheses. Section 5 discusses the theory implications, recommendation for policy, limitations and suggestions for further work.

## 2. CONCEPTUAL FRAMEWORK

### 2.1. Institutional dimensions of the EE

We argue for understanding the EE dimensions (conditions) as a set of complex, interconnected objects or components. We will consider three components of the institutional framework of EE (also described as EE factors or framework conditions; Audretsch et al., 2021; Stam, 2018). These are formal rules and government policies, cultural values dimension and socio-cultural practices (descriptive norms) (Stephan et al., 2015). We emphasise the latter, but we include all three elements in our analysis.

Within the three institutional dimensions, the first distinction is between formal (regulatory) and informal institutions, which became fairly standard in EE research (Chowdhury et al., 2019; Rothstein et al., 2013). Next, however, we follow Stephan et al. (2015) and within informal institutions, we distinguish between cultural values dimension and socio-cultural practices (descriptive norms). Table 1 shows the operationalisation of all these three dimensions.

Our particular interest is in the third, socio-cultural practices dimension. This dimension has been included in conceptual models (Stam, 2015), based on the frameworks of economic geography, industrial clusters and

**Table 1.** Descriptive statistics.

| Variables | Description of variables | Mean | SD | Minimum | Maximum |
|---|---|---|---|---|---|
| *Dependent variable* | | | | | |
| EE Growth Orientation | There is a high quality growth-oriented entrepreneurship ecosystem (EE) in my region (city) aiming at high-quality of entrepreneurship outcomes and growth aspirations (1 = do not agree, 7 = fully agree) | 4.68 | 1.50 | 1.00 | 7.00 |
| *Regulatory dimension* | | | | | |
| Government support | Formal rules and government institutions support entrepreneurship in my region (city) (e.g., grants, mentoring, etc.) (1 = do not agree, 7 = fully agree) | 3.89 | 1.42 | 1.00 | 7.00 |
| Formal networks | There is a sufficient formal network to support entrepreneurship EE in my region (city) (1 = do not agree, 7 = fully agree) | 3.84 | 1.34 | 1.00 | 7.00 |
| *Cultural values dimension* | | | | | |
| Media support | There is enough support of independent mass media (press) to entrepreneur ship in my region/city (e.g., stories in media about entrepreneur s, blogs about entrepreneur s, etc.) (1 = do not agree, 7 = fully agree) | 3.89 | 1.51 | 1.00 | 7.00 |
| Entrepreneurial culture | There is a strong entrepreneurship culture and orientation in my region/city (entrepreneur ship is prestigious, people are proud to be entrepreneur s, they know entrepreneurs, etc.) (1 = do not agree, 7 = fully agree) | 4.09 | 1.59 | 1.00 | 7.00 |
| *Socio-cultural practices dimension* | | | | | |
| Sustainability entrepreneurial behaviour | There is a strong awareness of sustainable behaviour by entrepreneurs in my region/city (entrepreneurs support healthy life style, veganism, maintain energy efficiency, target sustainable growth, firms employ corporate social responsibility, engage in climate change issues and recycle) which influences how business activity is done (1 = do not agree, 7 = fully agree) | 3.72 | 1.46 | 1.00 | 7.00 |
| Informal networks | There is a sufficient support and availability of informal networks to support entrepreneur ship EE in my region/city (personal contacts, investors not officially registered, family links, knowing entrepreneur from personal experience) (1 = do not agree, 7 = fully agree) | 4.41 | 1.56 | 1.00 | 7.00 |
| Political entrepreneurship | There is a strong political entrepreneurship in my city (economic activity in a strong formal and informal cooperation with local/national government to access resources in a privileged way compared with other entrepreneurs) (1 = not likely, 7 = very likely) | 4.39 | 1.48 | 1.00 | 7.00 |
| *Control variables (EE)* | | | | | |
| Environmental concern | A share of a city population registered on IQAir earth platform who monitor the level of air contamination and pollution in a city | 7.42 | 10.93 | 1.13 | 45.63 |

(*Continued*)

**Table 1.** Continued.

| Variables | Description of variables | Mean | SD | Minimum | Maximum |
|---|---|---|---|---|---|
| Roads | Number of highways connecting the city | 3.67 | 1.47 | 1.00 | 7.00 |
| Air transport | Number of airlines flying in and out of a city | 16.91 | 12.34 | 2.00 | 42.00 |
| Business incubators | Number of active business incubators | 3.10 | 2.32 | 0.00 | 8.00 |
| Capital city | Binary variable = 1 if capital city, = 0 otherwise | 0.50 | 0.50 | 0.00 | 1.00 |
| Population | City population size in logs (Eurostat, 2020) | 13.60 | 1.19 | 11.53 | 16.56 |
| Venture capital | There is a sufficient support and availability of d venture capital/business angels/crowdfunding in my region (city) (1 = do not agree, 7 = fully agree) | 3.45 | 1.54 | 1.00 | 7.00 |
| Debt Capital | There is a sufficient availability of debt capital like banks or other debt credit in my region (city) (1 = do not agree, 7 = fully agree) | 4.41 | 1.67 | 1.00 | 7.00 |
| Business schools | Number of business schools | 10.93 | 4.54 | 1.00 | 17.00 |
| Air pollution | IQAir earth data from = 1 not polluted city to = 300 most polluted city globally ranked variable; https://www.iqair.com/us/ear | −78.63 | 39.92 | −158.00 | −6.00 |
| *Control variables (respondent characteristics)* | | | | | |
| Entrepreneur | Area of activity (entrepreneur = 1, otherwise = 0) | 0.31 | 0.51 | 0.00 | 1.00 |
| Professor | Area of activity (professor = 1, otherwise = 0) | 0.10 | 0.30 | 0.00 | 1.00 |
| Multiple occupations | Multiple occupations: any combination of entrepreneur, professor, policymaker, investor, director/manager in a multinational company, manager of the technology transfer office (TTO), manager in techno park (accelerator); (lawyer, other = 1), 0 otherwise | 0.34 | 0.50 | 0.00 | 1.00 |
| Gender | Gender (male = 1, female = 0) | 0.49 | 0.50 | 0.00 | 1.00 |
| University degree | Have you got a university degree or higher? (1 = yes; 0 = no) | 0.79 | 0.39 | 0.00 | 1.00 |
| Age range | Age group (≤ 29 years old = 1; 30–39 = 2; 40–49 = 3; 50–59 = 4; 60–69 = 5; ≥70 = 6) | 2.41 | 1.09 | 1.00 | 6.00 |

Note: Number of observations = 1794.
Source: Authors based on online survey and Google Street data.

innovation systems (Spigel, 2017; Stam & van de Ven, 2021). It includes the resource and knowledge-sharing, and wider cooperation between EE actors in a specific cluster or geographic area (both horizontal networking and linkages with local politicians and policymakers). The cooperation may also be facilitated by the prosocial orientation of the businesses (Isenberg, 2010; Santos, 2012), including when sustainable entrepreneurial strategies are aligned with wider prosocial practices in the local environment. However, there are still gaps in the explanations of the role of entrepreneurs' social orientation within the EE dimension of socio-cultural practices and, as we will argue in the next subsection, in particular in enhancing EE growth orientation.

We posit that there is space for the development of new theories or for linking existing theories to EE in order to better understand how the entrepreneurs' prosocial practices shape EE outcomes. We are particularly interested in the adoption and introduction of socio-cultural practices (norms) in business models that correspond to the environmentally sustainable behaviour of entrepreneurs who engage with local communities and other entrepreneurs.

Thus, this study focuses on understanding how the specific element of the socio-cultural practice dimension of institutions (Stephan et al., 2015) related to environmentalism and sustainability enhances the EE growth orientation in cities. Alongside the quality of formal institutions (Chowdhury et al., 2019; Rothstein et al., 2013) and the cultural values component (Javidan et al., 2006; Stephan et al., 2015), these socio-cultural practices may support the growth orientation of EEs. Our approach differs from the institutional theory frameworks derived from economics, which limit the categorisation of institutions to formal and informal (e.g., O'Connor & Audretsch, 2023), because we propose to further split informal institutions into cultural values and socio-cultural practices.

## 2.2. Three institutional dimensions of the EE and its growth orientation

We will now consider how the three institutional dimensions of the EE may connect to the EE growth

orientation. First, the regulatory dimension facilitates EE development via a system of supportive laws, regulations and government policies (Bosma et al., 2018). While regulation plays an important role in entrepreneurship (Elert et al., 2019), neither underregulation (Darnihamedani et al., 2018; Stenholm et al., 2013) nor overregulation fosters (productive) entrepreneurship (Chowdhury et al., 2019). Arguments justifying governmental intervention in EEs in the form of regulations are related to market power (market entry barriers), asymmetry of information and provision of public goods, for which consumption is non-rival and non-excludable (Michael & Pearce, 2009). The regulatory pillar can thus both foster or slow down entrepreneurship, conditional on its substantive content and design. Besides the effects of taxes or labour market regulations (Elert et al., 2019), other aspects of the regulatory pillar can affect EE outcomes in direct and indirect ways. There are multiple ways in which local government is able to facilitate and support local entrepreneurs within a remit of legal frameworks defined over a wider territory. First, local governments use collaborative partnerships between entrepreneurs and the public sector to promote entrepreneurship via legal mechanisms, such as establishing new institutional arrangements that advocate the diffusion of knowledge and finance by stakeholders (Xing et al., 2018). Second, local governments can amplify positive agglomeration externalities. When a city's boundaries allow it to capture more of those, it is more likely to design policies that amplify these effects and offer specific programmes to attract entrepreneurs into a city, including allocating grants (Audretsch et al., 2025) and financial resources (Shoag & Veuger, 2018). With respect to the latter, local government support for entrepreneurs may either complement or sometimes crowd out private sector mechanisms and venture capital. Third, local government policy promotes entrepreneurship that aims to address societal and economic challenges targeting specific local communities within cities (Bjorna & Aarsaether, 2010; Xing et al., 2018). The entrepreneurship-supporting activities of local governments include local zoning plans, the promotion of investment benefits in specific locations (Godlewska & Pilewicz, 2022), and the establishment of local start-up and innovation parks.

Local governments in cities aim to aid entrepreneurs not only by direct support (finance, knowledge transfer), but also by increasing the variety and number of business contacts within the environment (Lefebvre et al., 2015; Xing et al., 2018). Furthermore, direct government entrepreneurship support assists entrepreneurs in the critical firm foundation phase, leading to higher entrepreneurial ambitions and higher EE growth orientation (Chowdhury et al., 2019; Clarysse & Bruneel, 2007; Szerb et al., 2019). We hypothesise the following:

*Hypothesis 1: The regulatory institutional dimension supporting entrepreneurship enhances EE growth orientation.*

Second, the cultural values dimension includes values and beliefs related to entrepreneurship (Stephan et al., 2015). Cultural values impose 'higher order' constraints on 'lower order' norms of individual behaviour, which in turn specify how things should be done, facilitating convergent expectations and cooperation (Crawford & Ostrom, 1995; Urbano & Alvarez, 2014). Thus, values are the fundamental principles used to evaluate which behaviour is desirable and which is undesirable, combining evaluative and cognitive components. Cultural values set up the 'higher order', more implicit rules of the game, including those related to entrepreneurship. Compared with the previously discussed 'hard' (regulatory) institutions, scholars label them 'soft' institutions (Woolthuis et al., 2005) as they are not accompanied by direct legal means of coercion based on the power of the government.

Values relevant to EEs involve evaluations of risk-taking and risk avoidance, and more specifically evaluation, negative or positive, of entrepreneurship, alongside attitudes towards innovation and individual initiative, and the degree of approval of gains and success made through entrepreneurship in society (Bosma et al., 2018; Mickiewicz & Kaasa, 2022). Thus, local cultures affect entrepreneurial activities by shaping what is acceptable (Aoyama, 2009). Kibler et al. (2014) found that societal values influence opinions about entrepreneurship, such as making it look like a standard career path or, in contrast, depicting it as a last resort, to be undertaken only when there are no other options available. Cultural traits supporting entrepreneurship imply that public attention is drawn to entrepreneurial success stories which are highlighted by the media, and this, in turn, influences entrepreneurial activities (Feldman et al., 2005; Isenberg, 2010) so that an individual's choice based on opportunity entrepreneurship, as contrasted with necessity entrepreneurship, is enhanced (Audretsch et al., 2022).

Motoyama et al. (2016) underlined the influence of the local culture of risk-taking on entrepreneurs. The positive valuation of risk-taking behaviour is associated with social acceptance of innovation, and ambitious, growth-oriented forms of entrepreneurship associated with more risk (Estrin et al., 2013a). The latter corresponds to what we label EE growth orientation.

Thus, values related to what is perceived as good or bad (Frese, 2015) may support entrepreneurial activity generally, but also its ambitious, growth-oriented forms associated with risk-taking and innovation (Szerb et al., 2019). We hypothesise the following:

*Hypothesis 2: The cultural values dimension supporting entrepreneurship enhances EE growth orientation.*

However, the cultural values we just discussed need not directly correspond to socio-cultural practices (Estrin et al., 2013a; Jepperson, 1991; Stephan et al., 2015). People affirm the values, but 'acting self … has control (partial or total) of certain events in a given system' (Coleman, 1994, p. 508) and may deviate from the values (Chiu et al., 2010) and declared preferences (Autio et al., 2013) in actual behaviour. This may result in a misalignment between cultural values and cultural practices (Frese,

2015). The GLOBE Project reports empirical examples of this misalignment as a negative correlation between the 'as it is' and 'as it should be' dimensions (Javidan et al., 2006).

The content of cultural practices varies, yet with globalisation, societies around the globe face an increasing number of common social and environmental challenges that could be answered by both social action and sustainable-oriented entrepreneurship (Akgüç, 2020; Gasparin et al., 2021). We isolate aspects of cultural practices related to social action by the entrepreneurs who incorporate objectives shared with the community into their activities. This can also be interpreted as building local social capital (Malecki, 2012). We pay attention to the specific content of cultural practices as revealed by social activities by entrepreneurs, addressing key social and environmental challenges. These patterns in social action by entrepreneurs will correspond to the socio-cultural aspects conducive to growth-oriented entrepreneurship, as we will argue next. The prosocial practice pillar corresponds to entrepreneurial social engagement, which may enhance entrepreneurial dynamism both (2) directly (via socio-cultural practices that open new business opportunities by addressing societal needs and enhancing commercial demand) and (2) indirectly by aligning it with local community objectives and enhancing the scope for cooperation, therefore facilitating access to resources for commercial objectives (Estrin et al., 2013b). The socio-cultural practices of interest correspond to entrepreneurs undertaking actions to address social and environmental challenges (Apostolidis et al., 2022). There is no contradiction between social and economic objectives for entrepreneurs; rather, economic value creation will both support and be built on the socially responsible behaviour of entrepreneurs (Estrin et al., 2013b). Common objectives bring actors together, and this works as a 'lubricant', smoothing other relationships (Anderson & Jack, 2002), including commercial ones. Hence, the second indirect effect. Generally speaking, social capital is built when people know, appreciate and show interest in each other, exhibiting potential for common action (Coleman, 1994). This leads to networking between actors, enhancing the connectivity of the ecosystem. Furthermore, entrepreneurial activity becomes more impacted by customer approval and demand for prosocial practices (demand-side mechanism) (Branzei et al., 2018), and this approval may also have a positive impact on commercial demand for products and services.

The set of opportunities generated by the rapid pace of social change includes demand-side features such as recycling, interest in green products, veganism and sustainable lifestyles. It also includes supply-side mechanisms, such as technological and organisational responses to environmental pollution and to non-sustainable resource extraction (Azmat & Samaratunge, 2009). Entrepreneurs are important actors in solving or at least mitigating the issues considered. The emergence of environmental and sustainability-oriented entrepreneurial practices may also generate a distinct type of entrepreneurial opportunity and enhance the dynamism of the entire ecosystem (Audretsch & Belitski, 2021).

The socio-cultural practice of entrepreneurs adopting social objectives, and sustainability in particular, supports the innovativeness and the dissemination of sustainable discoveries, encouraging entrepreneurial growth ambition and increasing visibility and therefore, connectedness with EE stakeholders (Koe & Majid, 2014; Kraus et al., 2018). We expect the entrepreneurs' growth-oriented strategies (Stam & van de Ven, 2021) to be also aligned with the introduction of new-to-the-world products, services and processes (Mastini et al., 2021).

Drawing on Coleman (1994), cultural practices are fundamental for creating social capital, and the latter is also associated with the focus on the public good (Estrin et al., 2013b). The socio-cultural practice dimension includes the adoption and implementation of prosocial norms by entrepreneurs, also by those who are primarily economically oriented. The substantive content of this socio-cultural practice dimension includes sustainable entrepreneurial behaviour and strategic action by enterprises taking advantage of new opportunities generated by the quest for a sustainable environment and environmentally friendly behaviour (Doherty et al., 2014). This suggests that the potential for ambitious, growth-oriented entrepreneurship and the visibility of entrepreneurs in the ecosystem will be enhanced by entrepreneurs aligning the economic and social values within their activity. The result is a stronger entrepreneurial ecosystem.

Last but not least, with respect to networking and stronger connections between actors (Knox & Arshed, 2022) we already discussed, we should also include stronger linkages with the local government. Thus, alongside social entrepreneurial initiatives addressing key societal challenges, interacting with and lobbying the local government by entrepreneurs is also indicative of socioeconomic practices conducive to ambitious, growth-oriented forms of entrepreneurship. We hypothesise the following:

*Hypothesis 3: The socio-cultural practices dimension supportive of entrepreneurship enhances EE growth orientation.*

## 3. DATA AND METHODOLOGY

### 3.1. Survey and data collection

To test our hypotheses, we utilised both objective data and developed a new survey to investigate the dependent variable capturing EE growth orientation and the components of the EE framework dimensions. Data were collected from 1789 EE stakeholders within 17 cities in Eastern and South-Eastern Europe and Central Asia. By focusing on EE stakeholders' perceptions, we follow Knox and Arshed (2022) approach, but while they produce insights based on in-depth interviews, we complement their work by utilising a survey. More broadly, our focus on perceptions is also consistent with Lyons and Roundy (2023) call for more attention to the micro-level of EE actors.

We adhere to the literature that considers cities as appropriate spatial units for the analysis of EEs (Bosma & Sternberg, 2014; Content et al., 2020; Feldman et al.,

2005; Stojčić et al., 2022). A total of 17 cities were selected, building upon the clustering of cities and countries by similar institutional and economic conditions. In particular, we draw on the GLOBE (Javidan et al., 2006) classification of countries and regions and ask where cultural values and norms follow similar patterns by country and region. This programme categorises countries based on cultural dimensions, regulatory institutions and economic conditions, which enabled us to select a group of similar countries, in order to isolate the national dimension from the meso-level of cities we intend to focus on. We were unable to focus on all cities in those countries, but aimed for two major cities in each country: (1) the capital city and (2) the second largest city – the largest regional centre.

The sample of respondents was drawn from different types of EE stakeholders. These included university professors across the social sciences, economics, and business fields, non-profit organisations, government agents, entrepreneurs, techno park or incubator managers, venture investors, representatives of a bank or trust, and the chief executive officers or deputy chief executive officers of multinational companies. In the case of each city, all eight categories were represented (see Table A1 in Appendix A in the supplemental data online). In selecting these categories, we drew on prior research on the role of stakeholders in the ecosystem (Belitski & Büyükbalci, 2021; Brown & Mason, 2017). The respondents were selected from the register compiled by the local Chambers of Commerce; we included the active EE stakeholders of each city that had satisfied the requirements of living and working in the city for over five years.

Our study follows the Eurostat approach of the core-city, also known as the local administrative unit (LAU), corresponding to the administrative boundaries of the city (European Commission, 2005); this is where respondents were selected from. The survey included questions intended to verify that the respondent was the organisation's key decision-maker. We received a list of 13,156 addresses from the chambers of commerce in the selected cities. One in four of the addresses were randomly selected (Kumar et al., 1993). A total of 3239 invitations to complete the survey were sent to EE stakeholders in November 2018 and followed up with three reminders over a one-month period. A further 2260 EE stakeholders were sent invitations in February 2019, again with three reminders following. A total of 388 had outdated contact information and could not be contacted. While 1934 EE stakeholders completed the questionnaire, 104 questionnaires were unusable, leading to an initial sample of 1830. Due to various missing values, the number of observations used in the actual econometric analysis was reduced to 1789. Therefore, the 14.7% final response rate was achieved.

Our four major groups of stakeholders[5] are entrepreneurs (35.1% of the sample), university professors (8.1%), policymakers (7.4%), as well as respondents with multiple affiliations (31.9%).

Summary statistics are presented in Table 1, which also lists the questions used in the construction of the variables. Respondents were from cities including Warsaw (103 observations) and Wroclaw (102 observations) in Poland; Lviv (96 observations) and Kyiv (120 observations) in Ukraine; Cluj (119 observations) and Bucharest (120 observations) in Romania; Plovdiv (100 observations) and Sofia (101 observations) in Bulgaria; Astana (104 observations) and Almaty (106 observations) in Kazakhstan; Batumi (62 observations) and Tbilisi (132 observations) in Georgia; Istanbul (89 observations) in Turkey; Klagenfurt (114 observations) in Austria; Zagreb (115 observations) and Osijek (105 observations) in Croatia; and Sarajevo (103 observations) in Bosnia and Herzegovina. The distribution of observations is consistent across cities in our sample and is summarised in Table 1.

### 3.2. Dependent variable

Based on the discussion above, we operationalise EE growth orientation, drawing on the high-growth aspiration entrepreneurship literature (Autio et al., 2013; Estrin et al., 2013a) and on the work of Guzman and Stern (2020). We use the following survey instrument: 'There is a high-quality growth-oriented entrepreneurship ecosystem (EE) in my region (city) aiming at high-quality entrepreneurship outcomes and growth aspirations'. It is measured on a Likert scale from 1 = do not agree (destructive entrepreneurship) to 7 = fully agree (productive entrepreneurship) (Baumol, 1990; Stam & van de Ven, 2019). Our survey tool is linked to ambitious entrepreneurship activity, the antecedents and mechanisms of which were discussed by the literature just cited, but never operationalised or tested as EE components.

### 3.3. Explanatory variables

We start with explanatory variables that correspond to the three city-level institutional dimensions we hypothesised about.

For the *regulatory dimension,* we focus on formal organisations and policies that support cooperation between ecosystem stakeholders such as universities, incubators, accelerators, chambers of commerce, government grants and Triple Helix collaborations (Brown & Mason, 2017). We ask about the respondent's perception of the role of these organisations in supporting entrepreneurship (*Formal networks*). The survey question reads: 'Formal rules and government institutions support entrepreneurship in my region (city) (e.g., grants, mentoring, etc.) (1 = do not agree, 7 = fully agree)'.

The second variable relates to stakeholders' perceptions about the availability of government support to entrepreneurship (*Government support*), for example, similar to the Small Business Innovation Research programme handled by the Small Business Administration in the United States, or public–private partnerships (Chowdhury et al., 2019). The survey question asks about the following statement: 'There is a sufficient formal network to support entrepreneurship EE in my region (city) (1 = do not agree, 7 = fully agree)'.

**Table 2.** Correlation matrix.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. EE growth orientation | 1 | | | | | | | | | | | | | | | | |
| 2. Government support | 0.428* | 1 | | | | | | | | | | | | | | | |
| 3. Formal networks | 0.407* | 0.487* | 1 | | | | | | | | | | | | | | |
| 4. Media support | 0.371* | 0.374* | 0.470* | 1 | | | | | | | | | | | | | |
| 5. Entrepreneurial culture | 0.525* | 0.324* | 0.469* | 0.453* | 1 | | | | | | | | | | | | |
| 6. Sustainability entrepreneurial behaviour | 0.387* | 0.336* | 0.424* | 0.438* | 0.499* | 1 | | | | | | | | | | | |
| 7. Informal networks | 0.370* | 0.325* | 0.485* | 0.366* | 0.382* | 0.276* | 1 | | | | | | | | | | |
| 8. Political entrepreneurship | 0.026 | −0.081* | 0.023 | 0.009 | 0.004 | −0.041 | 0.206* | 1 | | | | | | | | | |
| 9. Environmental concern | 0.002 | 0.065* | 0.128* | −0.023 | 0.118* | 0.006 | −0.023 | −0.053* | 1 | | | | | | | | |
| 10. Roads | 0.208* | 0.038 | −0.013 | 0.114* | 0.113* | 0.089* | 0.069* | −0.016 | −0.194* | 1 | | | | | | | |
| 11. Air transport | −0.126* | −0.002 | −0.085* | 0.019 | −0.100* | −0.108* | −0.045 | 0.108* | −0.100* | 0.363* | 1 | | | | | | |
| 12. Business incubators | −0.065* | 0.047* | 0.018 | 0.061* | −0.044 | −0.021 | −0.058* | −0.050* | 0.151* | 0.284* | 0.752* | 1 | | | | | |
| 13. Capital city | 0.027 | 0.063* | 0.009 | 0.010 | 0.010 | −0.055* | −0.037 | 0.068* | 0.401* | 0.513* | 0.536* | 0.327* | 1 | | | | |
| 14. Population | 0.048* | −0.027 | −0.047* | 0.090* | 0.032 | −0.030 | 0.080* | 0.038 | −0.144* | 0.504* | 0.638* | 0.578* | 0.218* | 1 | | | |
| 15. Venture capital | 0.418* | 0.448* | 0.464* | 0.408* | 0.393* | 0.423* | 0.353* | 0.037 | 0.123* | 0.171* | −0.008 | 0.020 | 0.160* | 0.097* | 1 | | |
| 16. Debt Capital | 0.399* | 0.301* | 0.404* | 0.338* | 0.407* | 0.268* | 0.445* | 0.086* | 0.007 | 0.082* | −0.112* | −0.160* | 0.045 | −0.019 | 0.350* | 1 | |
| 17. Business schools | 0.086* | 0.059* | 0.027 | 0.081* | 0.115* | 0.072* | −0.040 | −0.074* | 0.107* | 0.092* | 0.333* | 0.443* | 0.122* | 0.440* | 0.070* | −0.007 | 1 |
| 18. Air pollution | 0.129* | 0.080* | 0.017 | 0.105* | −0.002 | 0.209* | −0.076* | 0.045 | −0.359* | 0.281* | −0.151* | −0.079* | −0.207* | −0.237* | 0.009 | −0.096* | −0.093* |

Note: Number of observations = 1794.
Source: Authors, based on online survey and Google Street data.

Cultural values – the cognitive dimension consists of two indicators. Our first variable is *Entrepreneurial culture*, which is measured as: 'There is a strong entrepreneurship culture and orientation in my region/city (entrepreneurship is prestigious, people are proud to be entrepreneurs, they know entrepreneurs, etc.) (1 = do not agree, 7 = fully agree)' (Stenholm et al., 2013). Second, we include a positive attitude toward business as reflected by the media (*Media support*) (Fritsch et al., 2019; Stenholm et al., 2013). It is measured by the following survey question: 'The independent mass media (press) supports entrepreneurship in my region/city (e.g., stories in the media about entrepreneurs, blogs about entrepreneurs, etc.)' (1 = do not agree, 7 = fully agree).

Finally, the socio-cultural practices dimension was operationalised using three survey instruments. First, we use *Sustainable entrepreneurial behaviour*, measured in the survey as 'There is a strong awareness of sustainable behaviour by entrepreneurs in my region/city (entrepreneurs support healthy lifestyles, veganism, maintain energy efficiency, target sustainable growth, firms employ corporate social responsibility, engage in climate change issues and recycle) which influences how business activity is done (1 = do not agree, 7 = fully agree)'. The indicator was used in previous studies (e.g., Salonen et al., 2018; Volkmann et al., 2021).

Second, we capture a descriptive norm of social sharing of entrepreneurial knowledge, which enhances entrepreneurial cognition about profitable market opportunities (*Informal networks*). It is operationalised by the following survey instrument: 'There is sufficient support and availability of informal networks to support entrepreneurship EE in my region/city (personal contacts, investors not officially registered, family links, knowing entrepreneur from personal experience) (1 = do not agree, 7 = fully agree)' (Stenholm et al., 2013).

Finally, we include *Political Entrepreneurship*, approximated by the following survey question: 'There is political entrepreneurship in my city (economic activity in a strong formal and informal collaboration with local/national government to access limited ecosystem resources)' on the Likert scale (1 = not at all to 7 = very high) (Belitski & Desai, 2016).

The institutional data used in this study are reported in Table 1; a correlation matrix is shown in Table 2.

The list of control variables includes business education, which is likely to be connected to entrepreneurial opportunities and skills (Colombelli et al., 2022). We obtained the number of business or management schools and faculties that teach entrepreneurship in a city from the Times Higher Education 'World University Rankings 2020'. The next variable measures the availability of venture and debt capital for entrepreneurs, which indicates the relative level of support for innovative, risky projects (Cumming et al., 2021) likely to be associated with growth ambition.

We include a city rank as reported in the IQAir air quality information web platform, scaled between 1 (not polluted) to 300 (most polluted), inversing the scale to range between −300 and −1. An increase in the indicator would mean a higher score and, thus, less air pollution. We interpret it as (partly) resulting from pressure created by the ecosystem actors who care about the natural environment and climate change.

Further, digital and physical connectivity and infrastructure enhance the collaboration between various economic agents and are essential for EE performance (Isenberg, 2010). We measure physical infrastructure and amenities by the number of highways connecting the city with other cities and the number of airlines flying in and out from major city airport(s).

Next, we include a binary variable taking on the value of 1 if a city is a country capital. We also control for city size as city population in logarithm.

Finally, we control for *environmental concerns* as the share of residents in a city registered at IQAir earth data to monitor air contamination and pollution in the city as an indicator of sustainability-related social concerns.

In addition to ecosystem framework conditions, we use the respondent's occupation and a set of other binary variables representing his/her individual characteristics, including gender, human capital (university degree or above) and age range (Reynolds et al., 1999).

### 3.4. Model

Given the nature of our dependent variable, which varies from 1 to 7 on a Likert scale (ordinal variable), we use ordered logistic regression. This approach is also applicable if both dependent and independent variables are ordinal. The following econometric model was estimated:

$$y_i = f(\beta x_{i,}\ \theta z_{i,},\ \mu_i) \quad i = 1, \ldots, N; \tag{1}$$

where $y_i$ is EE growth orientation, varying from 1 (low) to 7 (very high). $\beta$ and $\Theta$ are the parameters to be estimated, $x_{i,}$ is a vector of independent explanatory variables, while $z_{i,}$ is a vector of control variables including the individual characteristics of respondents; and $u_{it}$ is the error term.

## 4. RESULTS OF EMPIRICAL ANALYSIS

### 4.1. Aggregate measure of institutional dimensions and EE growth orientation

Before we move to regressions in the next subsection, as a preliminary step, as explained below, we aggregated the three EE institutional dimensions into one measure and inspected its raw association with EE growth orientation. By aggregating the institutional dimensions into one scalar, with policy applications in sight, we developed the city EE index (of city entrepreneurship factors) which may facilitate the generation of city-specific policy recommendations. We thus created the index, which builds on all eight indices that correspond to the three institutional dimensions. Using the Cronbach's alpha approach (alpha = 0.74), we confirmed that the resulting scale based on averages is coherent (see Table A2 in Appendix A in the supplemental data online). At the same time, individual dimensions of the scale/index can additionally

be used to assess the weak and strong points of a city ecosystem, becoming a useful tool for policy planning.

As the next step, we illustrate and rank cities in our study using the city entrepreneurship index (inputs), which is the scale produced from eight institutional indicators (see Table A3 in Appendix A in the supplemental data online). We place these scores alongside the EE growth orientation (output) and produce a scatterplot in Figure 1. We find that the city of Cluj, the regional capital of Transylvania, Romania, scores highest in the city entrepreneurship index compared with other cities in the sample.

A close-up of Cluj can illustrate our findings from the local policy perspective. In recent years, the city has changed its policies and routines, becoming interested in environmental topics such as energy efficiency, green spaces and sustainable mobility, and has made significant investments in support of its natural environment alongside digitisation measures (Boc, 2022). The latter component implies the city can be seen as moving towards the 'digital entrepreneurial ecosystem' model (see Bejjani et al., 2023; Cuvero et al., 2023, on the importance of virtual platforms for knowledge spillovers). A turning point came with the 2014–2020 Development Strategy, built on the existing expertise in the Cluj community, calibrating the city's growth objectives and enhancing partnerships between the local administration, the local community and entrepreneurs. The policy is constantly revised with input from all relevant stakeholders and the local EE (administration, academia, non-governmental environment and civil society, businesses and self-employed). The city invested significantly in a large-scale green and digital transformation strategy. Cluj organically integrates technology into the life of the community, to increase the quality of life of its citizens and make local conditions conducive to starting a business. The digital transformation includes minimising societal and environmental impact through extensive use of digital tools and supports innovation and financing of young entrepreneurs who develop projects with a green focus (Boc, 2022). The development of the local ecosystem is co-created with a variety of stakeholders and by bridging science and engineering research and entrepreneurship activity.

In 2022, Cluj was accepted to join the European Union Cities Mission of 100 climate-neutral and smart cities by 2030, and in October 2023 its Climate City Contract outlining the pathways towards climate neutrality was approved by the European Commission (2023) – an outstanding achievement as only 10 climate city contracts were approved.

Taking care of sustainable practices, place-based policy can be multifaceted and revolve around adapting to and fostering the transformation of entrepreneurial opportunities, for example, away from mature industries such as diesel car production to emerging industries such as electric vehicle (EV) production and batteries. There is a high strategic alignment of various governance levels, and the city government takes up the environmental concerns of its citizens. Cluj does not only follow a comprehensive, internationally respected Smart City Strategy (Emerging Europe recently ranked Cluj first for smart city development in Europe), but also takes on a pioneering role in future-oriented strategies such as the electrification of public transportation (Popescu et al., 2022). This brief sketch of Cluj's entrepreneurial ecosystem illustrates how a city combines entrepreneurship and innovation while playing a leading role in environmental protection.

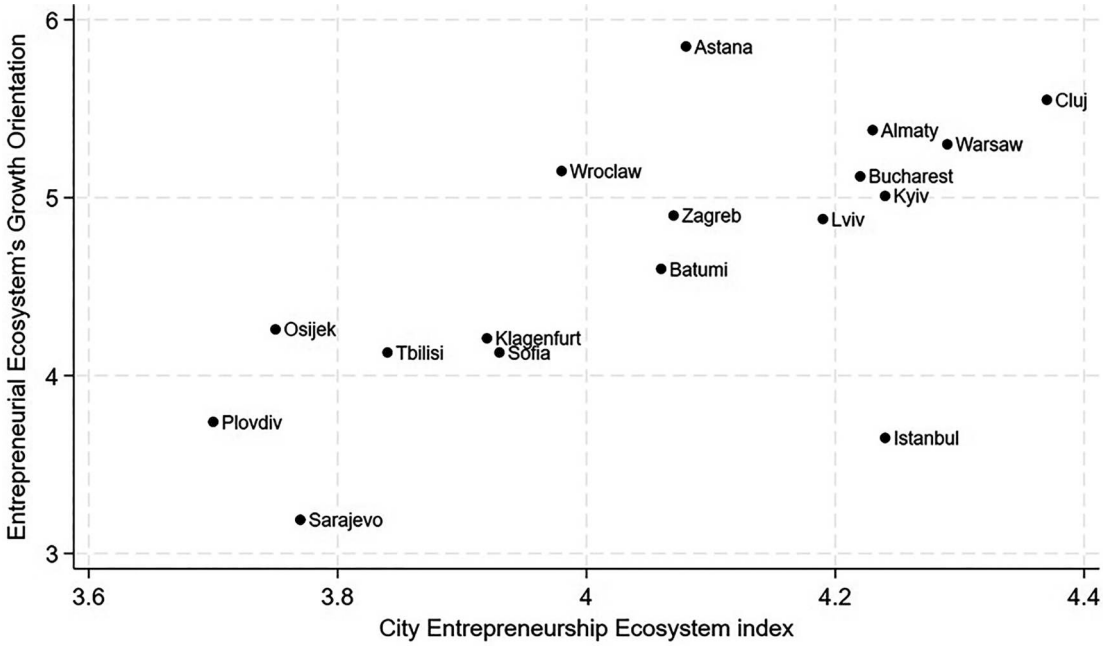


**Figure 1.** Scatterplot of the relationship between the city entrepreneurship ecosystem (EE) index (input) and the perceived EE growth orientation (output).
Note: Number of observations = 1794.
Source: Authors based on the online survey and Google Street data.

## 4.2. Regression models: hypotheses-testing

Table 3 presents the main results of our hypotheses-testing for EE growth orientation (specifications 1–5).

Given the hypotheses structure, our approach has been to first estimate a model with only controls (specification 1, Table 3), and then to add the explanatory variables

**Table 3.** Models of entrepreneurial ecosystem's growth orientation.

| **Specification** | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** |
|---|---|---|---|---|---|
| **Estimator** | **Ordered logit (reporting odd ratios)** | | | | |
| *Regulatory dimension* | | | | | |
| Formal networks (Hypothesis 1) | | 1.382*** | | | 1.079* |
| | | (0.06) | | | (0.05) |
| Government support (Hypothesis 1) | | 1.552*** | | | 1.393*** |
| | | (0.06) | | | (0.05) |
| *Cultural values dimension* | | | | | |
| Media support (Hypothesis 2) | | | 1.078** | | 1.026* |
| | | | (0.04) | | (0.04) |
| Entrepreneurial culture (Hypothesis 2) | | | 1.539*** | | 1.548*** |
| | | | (0.05) | | (0.06) |
| *Socio-cultural practices* | | | | | |
| Sustainability entrepreneurship behaviour (Hypothesis 3) | | | | 1.113** | 1.092** |
| | | | | (0.05) | (0.04) |
| Informal networks (Hypothesis 3) | | | | 1.106*** | 1.128*** |
| | | | | (0.04) | (0.04) |
| Political entrepreneurship (Hypothesis 3) | | | | 1.038 | 1.012 |
| | | | | (0.03) | (0.03) |
| *Control variables* | | | | | |
| Environmental activism | | | | 0.965*** | 0.970*** |
| | | | | (0.01) | (0.01) |
| Roads | 1.253*** | 1.326*** | 1.296*** | 1.337*** | 0.947 |
| | (0.05) | (0.06) | (0.05) | (0.06) | (0.07) |
| Air transport | 0.952*** | 0.959*** | 0.967*** | 0.969*** | 0.937*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Business incubators | 1.042 | 0.989 | 1.029 | 1.005* | 1.087** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.04) |
| Capital city | 1.128 | 0.948 | 0.802* | 0.803 | 2.314*** |
| | (0.14) | (0.12) | (0.10) | (0.10) | (0.58) |
| Population | 1.280*** | 1.334*** | 1.232*** | 1.145** | 1.555*** |
| | (0.07) | (0.08) | (0.07) | (0.07) | (0.14) |
| Venture capital | 1.190*** | 1.201*** | 1.165*** | 1.163*** | 1.143*** |
| | (0.04) | (0.05) | (0.04) | (0.04) | (0.04) |
| Debt Capital | 1.199*** | 1.167*** | 1.179*** | 1.153*** | 1.177*** |
| | (0.04) | (0.04) | (0.04) | (0.04) | (0.04) |
| Business schools | 1.132*** | 1.081*** | 1.034*** | 1.034*** | 1.020* |
| | (0.02) | (0.02) | (0.01) | (0.01) | (0.01) |
| Air pollution (reversed) | 1.014*** | 1.011*** | 1.012*** | 1.007*** | 1.007*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Respondent controls | Yes | Yes | Yes | Yes | Yes |
| $Chi^2$ | 524.13 | 852.04 | 1089.63 | 1101.72 | 1137.72 |
| Loglikelihood | −2927.67 | −2748.64 | −2595.75 | −2582.72 | −2558.25 |
| Pseudo-$R^2$ | 0.08 | 0.13 | 0.17 | 0.17 | 0.18 |

Note: Number of observations = 1794.
Source: Authors based on online survey and Google Street data.

related to each institutional dimension and test one hypothesis at a time (specifications 2 and 3, Table 3). Lastly, specification 5 (Table 3) tests the full model with all explanatory and control variables added.

In specification 2, we add the first element of our EE framework, the two items representing the regulatory dimension. We found that for a 1-unit increase in the evaluation of formal networks, the odds of EE growth orientation are 1.382 greater (specification 2, Table 3), with all of the other variables in the model held constant. Likewise, the odds of the EE growth orientation are 1.55 times greater for a 1-unit increase in the positive evaluation of government support (specification 2, Table 3). This supports Hypothesis 1.

In specification 3, we add the second framework dimension of cultural values, represented by entrepreneurial culture and by media, but exclude the variables representing the regulatory dimension variables. A 1-unit increase in the evaluation of entrepreneurial culture is associated with 1.539 times greater odds of EE growth orientation (specification 3, Table 3). The result on media is consistent with this, and a 1-unit increase in the evaluation of media coverage is associated with 1.078 times greater odds of EE growth orientation (specification 3, Table 3), supporting Hypothesis 2.

In specification 4 we progress further, adding the third framework dimension – socio-cultural practices, represented by sustainability entrepreneurial behaviour, informal networks and political entrepreneurship. We exclude cultural values and regulatory dimensions from the model. All coefficients except political entrepreneurship are highly significant (specification 4, Table 3), supporting Hypothesis 3 on socio-cultural practices being positively associated with EE growth orientation.

Lastly, in specification 5 we include all institutional dimensions and control variables. The political entrepreneurship coefficient remains insignificant, while the other coefficients of socio-cultural practices remain significant, supporting Hypothesis 3 (specification 5, Table 3). The results also continue to support Hypothesis 1 and Hypothesis 2. The strongest effect among all variables representing the three institutional dimensions relates to entrepreneurial culture (odds ratio = 1.548).

Looking at the control variables, we found that the odds of EE growth orientation are between 1.020 and 1.034 times greater for a 1-unit increase in business schools in a city. The odds ratio for the population variable is highly significant and > 1, indicating localised agglomeration effects. The odds ratio for the presence of business incubators in a city is also > 1, but the significance level varies. Based on the most complete final specification, they seem to play an important role in city entrepreneurial ecosystem growth orientation, in line with Kolympiris and Klein (2017). Finally, our measure of air pollution (reversed) ($\beta = 1.007$, $p < 0.01$ in specification 5, Table 3) is significant and positively associated with the odds of EE growth orientation.

Table B1 in Appendix B in the supplemental data online presents the results, where the ordered logit estimator was replaced by linear regression. The results are entirely robust to this alternative method of estimation.

## 5. DISCUSSION AND CONCLUSIONS

### 5.1. Theory

Our conceptualisation of the local institutional dimensions builds on the three-pillar framework proposed by Stephan et al. (2015), which in turn draws upon the GLOBE Project with its critical distinction between cultural values and cultural practices (Javidan et al., 2006). We argue that this facilitates the understanding of how local institutions impact city's EE growth orientation. This paper contributes to the institutional and EE growth orientation literature by proposing a socio-cultural practice dimension of the city institutional environment for urban EEs that emphasises practices related to addressing environmental and social challenges, informal networking and political entrepreneurship (Belitski & Grigore, 2022), while also investigating the two other institutional dimensions (regulatory and cultural values).

While we did not introduce the 'cognitive' dimension as for example, utilised by Stenholm et al. (2013), it could easily be represented by the presence of business schools and perhaps by knowledge transfers captured by both business incubators and venture capital activities.

We extended the framework by emphasising the role of prosocial as well as environmentally and sustainability-motivated emerging norms of behaviour within the dimension of socio-cultural practices. Coleman (1994) and Putnam et al. (1994) emphasised the role of formal networks of civic engagement, and the shrinking of these networks led Putnam (2000) to pessimistic conclusions about the decline of social capital. Our work is too limited in scope to contribute decisively to this discussion, but the results are consistent with the notion that forms of civic engagement change, and while they become less formal and more ad hoc, they are not necessarily weaker. In particular, the emerging social norms of environmentalism and focus on sustainability (both in the wider society and in business practice) have created new forms of social capital that are also 'appropriable' (Coleman, 1988) for businesses' commercial objectives, therefore enhancing EE growth orientation.

Consistent with this, our study calls for incorporating social, goal-oriented (rational) action into the EE framework, so that it is seen as part of the institutional environment of the city which is increasingly regarded as a focal 'hotspot' for growth, talent pool, innovation and entrepreneurial dynamics (Tavassoli et al., 2021). The socio-cultural practices dimension, along with the cultural values and regulatory dimensions, is positively associated with the city's EE growth orientation. More broadly, various forms of social activism revealed by descriptive (observed) social norms of collective action, especially those related to environmentalism, as we argue, make quality entrepreneurship more likely, both by pursuing a business action related to prosocial and sustainable practices and through their indirect effect. Our work opens a new avenue of

research on institutions and EEs where the socio-cultural practices dimension is emphasised, which is associated with the city's EE growth orientation. It may be seen as a (partial) response to a wider call by Cavallo (2024) to establish a cross-disciplinary research framework to advance research on EE.

The technological progress of the last 30 years, particularly in infrastructure and communication (Bejjani et al., 2023), did not weaken the role of local, space-anchored social action. EEs remain space-defined, and as social challenges are becoming more pressing, the attitude of local EE actors and societies, including entrepreneurs, towards these challenges becomes increasingly central in influencing entrepreneurial activity. As more EE actors and more members of local society become concerned about social and environmental topics and engage in social action, entrepreneurship responds to this. In other words, we postulate that EE models should consider social and environmental 'cultural practices' as revealed by social action. This is because entrepreneurs can draw upon the prevailing social capital as revealed by social action, and engage with other EE actors in a city and with society in general, including customers. Particularly with regard to the latter, it is apparent that purchasing decisions are increasingly influenced by social and environmental concerns.

## 5.2. Policy implications

Entrepreneurship is seen by policymakers as a potential force for addressing social challenges and societal needs, a possible mechanism of social and environmental value creation, productive also in its social aspect. Moreover, the evidence we report suggests that these social aspects of entrepreneurial behaviour, and in particular entrepreneurial focus on environmentalism and sustainability, do not undermine the dynamism of the EE we labelled as EE growth orientation; on the contrary, the association is positive. This draws attention to the 'green' socio-cultural practices dimension of the city institutions corresponding to sustainable entrepreneurial behaviour.

Policymakers are keen to increase both the growth orientation and the quality of entrepreneurial activity in cities. In this context, our findings suggest that their emphasis should be on developing supportive regulation, creating an entrepreneurial culture in media, and aligning business socio-cultural practices with environmental objectives, along with supporting knowledge transfers and providing physical infrastructure and international connectivity. We find that alongside the infrastructure and regulatory environment, the 'soft' elements of socio-cultural values and practices (Woolthuis et al., 2005) matter for both the growth orientation and the quality of EEs.

Below, we overview potential further implications for sustainable practices in cities where stakeholders work together. Firstly, perceptions about the quality of entrepreneurial inputs by stakeholders in a city must be aligned with regional and national policies on sustainability and industry trends. For example, investing in industries that put additional pressure on the environment is no longer socially desirable and is not a long-term opportunity.

Second, public support and stakeholder involvement in the process of business opportunity identification and commercialisation is essential. Decision-making needs to align with public sentiment and the desires of consumers and the public. When people prioritise and demand more environmentally friendly products and services, policies should reflect this shift in public opinion.

Third, entrepreneurial growth orientation is enhanced by social considerations and an emphasis on greener spaces. Policies should incorporate environmental and social factors, especially in the context of adopting or transitioning to new green technologies. This includes managing the environmental impact of industries and ensuring that social benefits from entrepreneurial activity are in congruence with economic benefits and desirable technologies used.

What we evidenced by creating the index is that *socio-cultural practices* play an integral part in creating an institutional environment (alongside the regulation and the cultural values), representing the behaviour of stakeholders, which critically contributes to the city's EE growth orientation. We suggest this index could be used when analyzing entrepreneurial ecosystems within a specific geographical context, accounting for increasing demand for sustainable yet growth-oriented entrepreneurial activity and for 'recasting of entrepreneurial ecosystem policy for the sustainable development' (Audretsch et al., 2024, p. 30).

In summary, our policy implications emphasise the importance of strategic alignment across different levels of governance, responsiveness to public opinion and environmental concerns, and the ability to navigate complex, multifaceted challenges within the city ecosystem. Here, the index could be used as a dynamic tool to analyse EE inputs and potential bottlenecks.

Our multidimensional framework of city-level EEs reveals a nuanced relationship between institutions and entrepreneurship activity, especially when we focus on EE growth orientation. Policy measures designed to enhance the type of entrepreneurial outcome in a city – in particular, high-impact entrepreneurship – would be well served to focus on socio-cultural practices, alongside the more traditional focus on regulation.

For practical implications, our research suggests that EE actors in a city, including entrepreneurs, should be encouraged to develop social capital via social activities in a city, as there are strategic benefits of investing resources in building social and economic relationships between different stakeholders. Cooperation between stakeholders provides conduits for information about entrepreneurial opportunities arising from global challenges, and ideas for how to respond to the latter in the future, and builds a city's competitive advantage by using a combination of EE elements.

In addition, this study furthers the arguments of Stam (2018) and Spigel (2017) that the 'bottom-up' approach to creating resilient yet growth-oriented EEs has gained momentum (Stam, 2018; Stam & Bosma, 2015), and is efficient, especially when supported by the digital

transformation as the case study of Cluj demonstrates. The use of Cluj city case study is theoretically and empirically valuable for understanding city-level institutions and policies and their impact on city's EE growth orientation. Theoretically, Cluj illustrates how policies that integrate digital and green transformation strategies can shape the city's entrepreneurial environment, aligning the digital ecosystems and sustainability frameworks. Empirically, Cluj's high city entrepreneurship index score is associated with policy initiatives, and participation in European Union climate programmes, which provide evidence of how proactive place-based policies can enhance entrepreneurial ecosystems by adapting to technological changes and sustainability demands. This case demonstrates that comprehensive strategies that integrate digital technology, environmental concerns and multi-stakeholder collaboration within an EE can facilitate a city's transition toward innovation-driven and sustainable growth. Thus, Cluj is a practical example of how to foster EE growth orientation. Policymakers following this approach and addressing both sustainability and technology challenges may enhance city's EE quality in middle-income and developing economies.

### 5.3. Limitations and future research

Finally, we offer suggestions for further research that arise from the limitations of this paper. First, a serious limitation of this study is that we do not have a representative sample for each category of stakeholder in each city. One solution would be to implement large surveys of working age populations in each city, modelled, for example, on the Global Entrepreneurship Monitor (GEM) methodology (Reynolds et al., 2005). The GEM-like surveys could then be augmented with additional questions to understand the occupational traits of each respondent, beyond entrepreneurship engagement so that the relevant stakeholders could be identified.

Second, the data in our study are cross-sectional, and we do not have appropriate instrumental variables to isolate causality between goal orientation, EE characteristics and outcomes. Furthermore, cross-sectional research does not readily permit a detailed analysis of learning effects as it may take several years for the benefits to become apparent. Although our paper offers an important first step in relating the social pillar to the EE growth orientation outcome, a longitudinal panel study could help us to better understand the dynamics.

Third, it remains on the frontier of EE research to focus on how and to what extent modelling of institutional dimensions could further contribute to a better understanding of this subject and possibly nurture EE quality and growth orientation via productive entrepreneurship.

Future research may explore the effect of socio-cultural practices on EE outcomes, as it is clear they will play a fundamental role in the development of innovations mitigating the social challenges the world faces. Future studies may consider the institutional dimensions from the triple-bottom-line perspective (Slaper & Hall, 2011). Further systemic conditions may be added to the framework. In addition to the institutional foundation, this includes the role of other local agents such as multinationals.

Last but not least, the insignificance of 'political entrepreneurship' in the final models may suggest that lobbying and close connections between entrepreneurs and local policymakers may have a less positive impact. The result is consistent with the idea that not all forms of social capital have beneficial effects. Here, the emphasis on EE growth orientation is important. What benefits the functioning of incumbent businesses may, at the same time, have a negative impact on EE dynamism. Lobbying and strong linkages between local politicians and businesses may be beneficial for incumbents, but at the same time represent 'unproductive' rent-seeking activity (Baumol, 1990; Sobel, 2008), replacing growth-seeking strategies. This may be an interesting avenue for further research.

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## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon request. The data are not publicly available due to information that could compromise the privacy of the research participants.

## DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

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## NOTES

1. We diverge here from a convention that abbreviates 'environmental economics' as EE. We hope we do not confuse readers.
2. An alternative theorisation and operationalisation of high impact entrepreneurship is proposed by Henrekson and Sanandaji (2020) who focus on top global young entrepreneurial firms and billionaire entrepreneurs per

million inhabitants. However, while this conceptualisation works well at the country level, it is not well-suited for city-level analysis, as the corresponding numbers are too low.

3. In particular, we focus on activities of new and young enterprises, leaving aside an important topic of entrepreneurial activities in mature organisations (intra-preneurship), which is discussed by Cestino Castilla et al. (2023).

4. We understand the local community as a group of people who live in a common location and are interconnected and interdependent. In our case, it may refer to localities within the city, or to the whole city. Coleman (1994) considers the local community as a primordial form of social organisation.

5. Alternatively, they can be described as EE actors or subsystems (see Cosenz et al., 2023, for further discussion). Further work could also focus more directly on EE leadership teams (Roundy & Evans, 2024).

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