

## Why do gazelles grow? An analysis of the high-growth business environment in the Euro area

*Francisco del Olmo-García - Fernando Javier Crecente-Romero - María Sarabia-Alegría - María Teresa del Val-Núñez*

### Abstract

High-growth companies (also called gazelles) are an increasing part of the European business fabric, especially after the Great Recession of 2007-09. They are creating new jobs and improving the competitiveness of Euro area countries. This paper documents the economic and institutional factors that have led this business segment to grow in importance. Using a panel of data for the Euro area member countries from 2014 to 2020, we estimate which factors are related to the evolution of high-growth firms. The results highlight the importance of economic growth, the weight of bank credit in the economy, labor flexibility, freedom of investment and the development of more creative and innovative products. The growth of this business segment does not seem to be influenced by other factors such as institutions, property rights and the quality of infrastructure. The conclusions drawn from this work can contribute to the development and implementation of public policies aimed at fostering business growth.

**Keywords:** *high-growth firms, Euro area, economic factors, institutions*

**JEL Classification:** M10, M21

Article history: Received: June 2023; Accepted: December 2023; Published: December 2023

## 1 INTRODUCTION

The influence of gazelles—high-growth companies—in the European economy has increased substantially over recent years. As can be seen in the latest available data in EUROSTAT, within the 27-nation European Union, the number of high-growth companies increased by 44% between 2014 (after the economic crisis) and 2019 (i.e., before the COVID-19 pandemic). Whereas, in 2014 these companies accounted for 8.58% of all active companies with more than ten workers, in 2019 the proportion was 11.46%. Moreover, despite the strong impact of COVID-19 on the business fabric, the proportion after the pandemic barely fell to 9.43%.

According to this latest available data, the case of Germany stands out, having over 30% of the high-growth companies in the Euro area. Italy and Spain also exceed the average, with 19% and 16% respectively. France, despite its economic importance within the monetary union, has only 6% of the total.

However, in terms of the importance of this business segment relative to the number of active companies with at least ten workers, some individual nations—Luxembourg, Malta, Holland, Portugal or Finland—stand out, with percentages greater than 12%. From this perspective, the size of the countries does not represent the relative importance of these companies in their economy, since in Germany it reaches 8%, while in France, Italy and Spain it is 8%, 10% and 11% respectively.

Not all sectors have the same importance in this segment of companies. High-growth companies stand out in the wholesale and retail trade sector, repair of motor vehicles and motorcycles, with <https://doi.org/10.7441/joc.2023.04.06>

20% of the total, in manufacturing with about 18%, and in the construction sector (15%). Within the services sector, professional, scientific and technical activities and administrative and support service activities also stand out, with more than 10%.

In terms of employment, this segment is important in job creation. The latest data shows that high-growth companies account for 12.5% of the employment created by active companies with at least ten workers in the European Union. In major economies such as Germany and Italy, the figure is close to this average, but it is higher in countries such as Malta (19.3%), the Netherlands (17%), Lithuania (16.1%), Spain (15.4%), Finland (15.6%) and Bulgaria (14.1%). On the other hand, the figure is lower in some economically important countries, such as France or Belgium (7.3% and 5.7 %, respectively, of employment share of this segment).

The increase in the relative importance of high-growth firms has been reflected in the academic literature. As Rocha and Ferreira (2021) point out, research on high-growth firms has increased exponentially in recent decades, a trend that has been particularly noticeable since 2013. They also point out that these firms provide a unique context for understanding organisational growth.

However, as noted by Hechavarria et al. (2019), high growth is not defined in the same way universally. Authors such as Lopez-Garcia and Puente (2012) have suggested that, to qualify, a firm needs to be among the top 10 percent of firms with the highest employment in 3 years, but EUROSTAT and OECD (2007) state that high-growth firms are those with sales growth of at least 20% per year over a three-year period. This definition is followed by authors such as Ko, Lee and Seol (2021). Finally, authors such as Gilbert, McDougall and Audretsch (1990) use market share to measure growth.

One of the segments of high-growth companies to which the literature ascribes importance is scale-up companies (Piaskowska, Tippmann & Monaghan, 2021; Tippmann et al., 2023), although authors such as Monteiro (2018) emphasise that there is no single definition of scale-up companies. However, it is emphasised that not all high-growth companies are scale-up companies, which makes it difficult for the literature to define and distinguish them formally.

These differences in the definitions in the literature generate a wealth of analysis, as they allow the importance of high-growth firms to be studied from different perspectives. However, it also generates differences in the availability of information, since public statistics tend to focus their resources on obtaining complete information on a particular definition and later expand the information from other perspectives, but sometimes without maintaining the same availability of data. This limitation is found, for example, in the EUROSTAT database, where the definition of high-growth companies that contains the best quality information defines these companies as those that have an average annualised growth in the number of employees of at least 10% per year over a three-year period and at least ten employees when growth starts.

Looking beyond the technical definition used, Diaz (2022) analysed the literature on high-growth firms and concluded that high-growth entrepreneurs are agents that seek and create opportunities that bring the economy to equilibrium, under market and institutional forces.

Diaz (2022) also defines the life cycle of enterprises and notes that the characteristics of potential high-growth entrepreneurs (first phase) are professional motivation, perception of market opportunities, social and cultural norms, availability of government and university support programmes, access to social and financial capital, and the potential stigma of failure. On the other hand, he characterises high-growth startups (second phase) on the basis of entrepreneurship, formal and informal institutions, entrepreneurs' perception of institutions,

R&D capacity and investment, firm resources, and firm orientation and behaviour. Finally, in the third stage of the life cycle, concerning the establishment of the firm, he characterises firms based on the drivers of institutional quality and effectiveness, the entrepreneurial culture of the context, the resources and capabilities created in the initial stages, the human capital of the leader and the competitive forces of the market.

Delmar, Davidsson and Gartner (2003) point out that high-growth firms do not grow in the same way, recognising the heterogeneity of these firms in terms of the extent of growth, the form of growth and their demographic characteristics. Indeed, authors such as Coad and Karlsson (2022) point out that most high-growth firms are small.

Pearce and Pearce II (2020) conclude that high-growth firms rely on different combinations of characteristics related to advanced technology, market aggressiveness and functional excellence.

There does seem, though, to be consensus in the literature on certain basic considerations of high-growth firms, as shown by Coad, Harasztosi, Pál, and Teruel (2022). They point out that 1) a small number of firms generate a large share of new jobs; 2) high-growth firms are young but not necessarily small; 3) they are found in all industries and are typically less R&D investment-intensive in manufacturing industries, although they are over-represented in knowledge-intensive service sectors; 4) rapid growth is not persistent for firms; 5) but it can be persistent at the regional level; 6) high-growth firms exhibit a high degree of heterogeneity and 7) they are difficult to predict.

Finally, Audretsch (2012) emphasises that high-growth firms, beyond their importance in the business structure, account for a considerable share of the employment created. He also highlights in his conclusions that firms with high employment growth are not necessarily new firms born out of entrepreneurial activity, but tend to be larger and more mature firms.

As seen throughout this paper, the literature on high-growth firms is focused on understanding their main characteristics from a microeconomic perspective, analysing the differences between them and other firms. However, there is a gap in the recent literature in our understanding of the environmental factors affecting the growth of this business segment within the Euro area, especially concerning the importance of employment generation within European economic policy.

This paper examines the economic and institutional factors in the business environment that have affected high-growth firms in the Euro area in recent years after the Great Recession. Firstly, therefore, this paper explores the influence of macroeconomic factors such as economic growth and bank financing on the growth of this segment. Secondly, it looks at the influence of institutional and structural factors such as freedom in the labour market and investment, the degree of innovation and creativity of product development, the degree of development of property rights, and the quality of institutions, human resources and infrastructure.

To this end, an analysis is developed of the segment of high-growth firms, from an employment perspective, based on panel data methodology for the Euro area countries in the period 2014-2020, this is, after the Great Recession.

The first part of the paper is a review of the main literature on high-growth firms. Second, the hypotheses underpinning the empirical part of the paper are defined. Third, the data and methodology used to validate the specified hypotheses are presented. Fourth, the results are

presented of the specified models that allow the hypotheses to be tested. Finally, the main conclusions are presented, as well as limitations and suggestions for future lines of work.

The results obtained have implications for economic policy. While policies aimed at economic growth and the promotion of bank financing are considered necessary, public authorities should also strive to improve the business environment in terms of labour market flexibility and freedom of investment, and to establish a framework that encourages innovation and creativity.

## 2 THEORETICAL BACKGROUND AND LITERATURE REVIEW

Due to the evolution of high-growth companies in recent years in various economic sectors, the literature has analysed this group of companies from a range of points of view.

A detailed analysis of this topic, though, must start from its theoretical foundations, which are subsequently complemented by empirical contributions. From the perspective of fundamentals, as Audretsch (2012) points out, the theoretical framework linking the firm and growth is found in what the literature calls Gibrat's Law: this states that the proportional rate of growth of a firm is independent of its absolute size. Likewise, the first contributions to the theory of business growth can be found in authors such as Penrose (1959), Baumol (1959), Chandler (1962) and Marris (1964), although the authors who have contributed over the years come from various fields of management, such as strategic management (Barney, 1991 and Porter, 1981, among others).

Indeed, Gibrat (1931) is considered a pioneer author in the development of research on business growth. The so-called Gibrat's Law emphasises the importance of the size of a business on its growth rate and concludes, finally, that business growth is independent of size.

This led other authors, such as Singh and Whittington (1975), to point out that Gibrat's Law means that there is no optimal firm size, and that the rate of business growth in a specific period does not influence that of subsequent periods.

Penrose's (1959) main contribution in this field focuses on developing the theory of business growth based on business resources, i.e., that the need for organisations to grow is based on the existence of idle resources that must be used to generate value, although this may lead to the need to acquire new resources in turn. It is, therefore, a question of approaching the study of business growth from a qualitative perspective. Along these lines, which emphasise the role of managerial decisions on business growth, the contributions of Baumol (1959), Chandler (1962) and Marris (1964) also stand out.

Other authors, such as Sallenave (1984), approached their analysis of business growth from a quantitative perspective, based on the volume of demand.

Within the entrepreneurial growth literature, Birch and Medoff (1994) coined the term "Mize and Gazelles" to describe the different growth patterns of slow-growth startups and fast-growth startups. Wennberg (2013) pointed out that interest in understanding the growth patterns of high-growth firms began at that point.

Concerning the analysis of the factors that influence the behaviour of high-growth companies, authors such as Monteiro (2018) highlight various theoretical perspectives from which the study of influential factors in high-growth companies is addressed. Examples are the resource dependency theory, the geographic perspective, other organisational perspectives such as the

one based on resources in dynamic capabilities, and the theory of business behaviour. However, this author also emphasises the relevance of the company's economic environment. Monteiro (2018) points out that the new institutional economics (based on North, 1990, among others) can be a suitable framework for the study of the influence of the institutional environment on the emergence and performance of high-growth firms.

From an empirical analysis perspective, the importance ascribed to the segment of high-growth companies has led to a significant increase in studies interested in knowing the behaviour of these companies; they too, though, have naturally delved into the theoretical foundations outlined above.

On the one hand, numerous authors have investigated the characteristic factors of high-growth companies based on their features and their internal policies and strategies. Amat, Renart and García (2013) report, for the case of Catalonia, that business policies related to quality, innovation, internationalisation and financial outlook influence business growth and long-term sustainability. Ko, Lee and Seol (2021) conclude from their study that R&D intensity, operating profit ratio, firm size and firm age are determinants of growth. In turn, Simbaña-Taípe, Ushiña and Salas (2019) point out that leverage, profitability, innovation, liquidity, solvency and size have a positive impact on the growth rate of high-growth firms. However, firm age has a negative impact. Krasniqi (2012) pointed out that four groups of factors influence firm growth: the factors of the firm itself, human capital, business strategy and entrepreneurial orientation. Finally, López-García and Puente (2012) concluded that past episodes of extreme growth increase the probability of rapid growth in the present, while the hiring of skilled personnel and credit are important in explaining firm growth, although in the latter case they are not determinants of rapid or extreme employment growth.

Moreno and Casillas (2007) pointed out that, compared to moderate growth or declining firms, high-growth firms are smaller, have more available idle resources and, in some cases, have fewer financial resources available to them.

In turn, Chanut-Guieu and Guieu (2014) argue that high growth results from the firm's leader's psychological state and the geographic security of the firm's origin, although the latter factor causes discomfort when high growth forces the firm to expand fiscally. Indeed, Coad et al. (2022) conclude from their analysis that, after a period of rapid sales and profit growth, firms begin to experience excess capacity (relative to demand for their products) while showing higher rates of employment growth. This leads to investments in capacity expansion, process improvements and more modern equipment rather than investment in R&D and new product development. These authors find that for some firms, overcapacity leads to massive incremental investments and sales growth, while for others it is negatively related to investments and sales. This is what they call the "fork in the road" hypothesis.

One of the growth drivers reported in the literature is the firm's age; Coad, Daunfeldt and Halvarsson (2018) noted that sales growth in newly established firms has positive momentum that, in turn, turns negative as firms get older. Thus, younger firms are more likely to experience consecutive periods of positive growth, and while new firms experience a first burst of sustained growth, older firms have more erratic growth trajectories. Coad, Segarra and Teruel (2016) concluded that younger firms obtain higher returns to R&D investment in the upper quantiles of the growth rate distribution while showing a steeper decline in the lower quintiles. Thus, R&D investment by young firms appears to be riskier than in the case of older firms. Similarly, Cruz, Baghdadi and Arouri (2022) point to the importance of high-growth firms' international

activity in concluding that firms that import or export, are foreign-owned or benefit from offshore regimes are more likely to become high-growth firms than other firms of similar size, age, sector and region. Indeed, Kiratli (2022) argues that citizens in regions with high rates of high-growth firms are more likely to see globalisation as an opportunity, with this view being particularly strong among the less educated population.

Coad and Srhoj (2020) conclude, using big data techniques, that firms that exhibit lower inventory levels, high previous employment growth and high short-term debt are more likely to become high-growth firms.

Other factors are adduced by the research perspective based on geographical criteria, as pointed out by Monteiro (2018) in his review of the literature. Giner, Santa-María and Fuster (2017) note that firms in technology districts and large urban areas are more likely to be high-growth, due to the comparative advantages for profit offered by location.

Several authors have analysed the importance of the business environment for this segment of companies (Monteiro, 2018). Bannò and Varum (2021) analyse the characteristics and determinants of high-growth firms in a crisis environment, concluding that high-growth firms are characterised by a high degree of indebtedness and productivity. They also note that the probability of sustaining high growth rates is low, and that it is difficult for policymakers to improve economic conditions by focusing on these firms alone. Mogos, Davis and Baptista (2021) agree that fast-growing SMEs cannot sustain these high growth rates for long, although they also note that these firms have lower volatility in growth rates and a higher chance of survival.

Caloghirou et al. (2020), who also focus their analysis on crisis environments, find that a strategy of geographical diversification significantly increases the firm's chances of achieving fast growth. Also, from a size perspective, whereas in smaller high-growth firms, entry into diverse product markets and leveraging R&D capabilities seem to contribute to relative employment change, growth can be achieved by larger firms through product diversification, acquisition of other firms or investment in training low-skilled employees. Finally, in his analysis oriented to extreme environmental conditions like Palestine, Darwish (2022) concludes that the factors that enable firms to achieve and maintain a high degree of growth include innovation and know-how, family growth, exploration and exploitation opportunities, human capital, strategic focus, business and social networks, external support, and flexibility and adaptability. On the other hand, Frešer (2022) notes that high-growth firms, being inherently younger, innovative and risk-prone, may be more strategically agile and more successful in adapting to global changes. This could suggest that high-growth firms can be the driving force in efforts to overcome recent environmental shocks such as COVID-19 or the war in Ukraine. In the face of crisis contexts (such as COVID-19), it is argued, high-growth entrepreneurs use various emotionally supportive labour practices to generate organisational resilience, although these practices are in tension with the strategic practices required for economic resilience (Ramli, 2022).

Regarding the influence of high-growth firms on their environment, on the one hand, Bisztray, Nicola and Muraközy (2022) point out that such firms tend to contribute to a country's productivity only during their rapid growth stage, with this effect being more intense in the case of sectors with young firms. On the other hand, Nicola, Muraközy and Tan (2021) find strong productivity gains for firms operating in sectors with a higher proportion of high-growth firms and for firms supplying industries with a higher share of high-growth firms.

One study that looked beyond the economic environment to the institutional conditions for high growth was Krasniqi and Desai (2016). They studied the institutional conditions affecting high-growth firms in transition economies and concluded that interaction effects (rather than direct effects) are important for understanding the behaviour of these firms and that the interaction between formal and informal institutions positively influences high-growth firms. This highlights the fact that, in economies based on faster reforms, formal institutions discourage the formation of high-growth firms, while in economies with slower reforms informal institutions encourage the development of these high-growth firms. Erhardt (2022) points out, however, that constraints in informal institutions, such as corruption, reduce both the likelihood of firms becoming high-growth and the sustainability of growth itself. Formal institutional constraints, though, do not deter firms from pursuing their growth ambitions and even favour higher growth. Constraints related to institutional governance, have a negative effect before high growth occurs, although they become less relevant after the expansionary growth phase (such as those which limit access to finance). Finally, Erhardt shows that, in emerging economies, institutional reforms are used as a policy tool to support high-growth entrepreneurship, although the slow pace of change in informal institutions means that reform efforts must be maintained. Likewise, Fuentelsaz, González and Maícas (2020) warn that, in countries where institutions do not support or ensure market efficiency, there are higher rates of entrepreneurial exits, as uncertainty and information asymmetry increase. They also point out that aspirations for high growth increase the level of exits from entrepreneurial activity, due to the greater risk involved in these projects and the difficulty of accessing the necessary resources. However, the existence of institutions that support market initiatives reduces the strength of this positive relationship between the level of aspirations for high business growth and exits from entrepreneurial activity.

Finally, the applied literature has addressed other issues of interest related to high-growth companies. On the one hand, in terms of problems faced by high-growth firms, Lee (2014) notes that problems are perceived in areas such as recruitment, shortage of skilled staff, securing finance, cash flow, management skills and finding suitable premises. Potential high-growth firms also see the economy, raising finance, cash flow and management skills as constraints to their growth, but are less likely to perceive regulation as a constraint.

On the other hand, in terms of public policies to develop the growth of companies, Giner, Santa-María and Fuster (2017) warn that the heterogeneity that characterises high-growth companies makes it difficult to define comprehensive policies for their development and consolidation. However, they do insist that policies should be aimed at encouraging the creation of companies in areas specialising in high-tech industrial and service sectors. This would not only allow the development of high-growth companies but also foster entrepreneurial activity based on innovation and knowledge activities. Likewise, as general policies to promote the development of high-growth companies, these authors point to improving the business environment (reducing or eliminating obstacles to growth such as administrative barriers), promoting entrepreneurship, helping companies access more financial resources and promoting R&D activities. Along these lines, Mason and Brown (2013) suggest that public policymakers should reflect on the specifics of the business environment, and public policies should focus on retaining high-growth firms acquired by non-local firms.

Similarly, Bosma and Stam (2012) investigate the characteristics of local policies for high-growth employment firms, pointing out that training policies within education policy and labour market policy can be more effective if they are targeted at specific groups relevant for firms transitioning to high-growth status. Indeed, they point out that these policies have local effects

because they are implemented, and sometimes designed, from a regional point of view. Also, as purely local policies, these authors highlight business accelerator programmes.

From a European perspective, despite the growing importance of this segment of companies in the European economy, few recent studies have addressed the environmental factors that influence the growth of this segment.

On the one hand, some European institutions have studied this business segment in greater depth, notably the studies within the framework of the European Investment Bank by Reypens, Delanote and Rückert (2020) or that of Flachenecker et al. (2020), within the framework of the Joint Research Centre. On the other hand, studies conducted by specific groups such as the European Patent Office and the European Union Intellectual Property Office are also interesting (Wajzman et al., 2019). Finally, the analysis carried out by Hölzl (2016) stands out as one of the most complete when it comes to relating environmental factors to European high-growth companies within the European context.

Therefore, despite the efforts made in the literature, there is a lack of updated analyses in which the environmental factors related to the evolution of the segment of high-growth companies for the Euro area are studied. It must be considered that the Euro area countries share norms, institutions and a common monetary policy, and that, since the sovereign debt crisis, they have strengthened their institutions. It is therefore necessary to delve deeper into how these recent changes, together with other, national, factors have conditioned the activities of high-growth companies over recent years.

### **3 HYPOTHESES**

Within the various theoretical lines that underpin the study of the conditioning factors of high-growth firms, this paper's framework facilitates an exploration of the factors of an economic and institutional nature that, as Monteiro (2018) concludes, are important for understanding the behaviour of this segment of firms.

Therefore, this work is framed in line with the literature that points out that institutions that support market initiative lead to a favourable environment for high-growth firms, identifying which factors are the most important to understand. Figure 1 represents the factors considered in this paper related to the evolution of the high-growth segment of companies in the Euro area in the aftermath of the Great Recession.

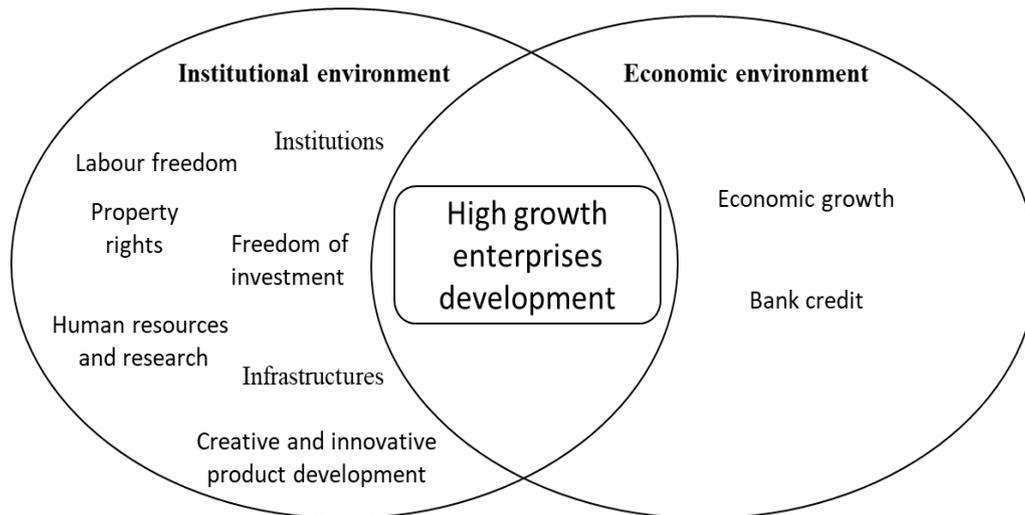


Fig. 1 – Economic and institutional environment factors. Source: own research

In order to understand how various environmental variables influence the performance of high-growth firms in the Euro area, several hypotheses have been specified and are shown below:

The first hypothesis is based on expecting a positive relationship between economic growth and high-growth firms. It cannot be forgotten that, in a globalised environment such as the current one, international economic shocks affect the European economy (Dees et al., 2007; Colombo, 2013). In this regard, Du, Gong and Temouri (2013) note that economic growth drives high-growth firms in services, concluding that, in the long run, macroeconomic conditions are important for higher growth.

H1: Economic growth has a positive relationship with the growth of high-growth firms.

On the other hand, business literature (especially studies focused on the analysis of SMEs) defines financial resources as one of the keys to their competitiveness (Anton et al., 2015). In a financial system with a high degree of bankarisation such as the European one, the importance of bank credit for the financing of business activities is a fundamental factor in the growth of companies (Goswami, Medvedev & Olafsen, 2019). Therefore, the second hypothesis to be tested is defined as follows:

H2: The higher the proportion of domestic bank credit in GDP, the higher the growth of high-growth firms.

Moreover, the literature has especially emphasised the importance of talent management in creating innovative and sustainable business models (Nieto-Alemán et al., 2023). As authors such as Henrekson (2014) point out, more flexibility in the labour market (e.g., through decentralised and individualised wage setting, transferable tenure rights or insurance systems that encourage mobility and risk-taking) would enhance high-growth firms. Baughn, Sugheir and Neupert (2008) also point out that labour flexibility is a predictor of the prevalence rates of high-growth entrepreneurship as well as of existing firms. This is why the third specified hypothesis focuses on the relationship between labour market freedom and the evolution of high-growth firms.

H3: Labour market freedom has a positive relationship with the growth of high-growth firms.

The fourth hypothesis is based on the importance of investment freedom for high-growth firms. Authors such as Felzensztein et al. (2022) argue that careful investment decisions by managers help both the internationalisation of firms and strong corporate growth (Amat, Renart and García, 2013; Baghdadi & Arouri, 2022). Likewise, from the perspective of competitiveness, authors such as Miller (1988), Urbancová (2013), Anton et al. (2015), Simionescu et al. (2021) or Sharma et al. (2022) point out the importance of the level of innovation of companies. Ortigueira-Sánchez, Welsh and Stein (2022) study innovation as a competitive factor in relation to the export capacity of companies. Other authors, such as Khatami et al. (2022), emphasise the importance of sustainable innovation and its relationship with various environmental factors, while authors such as Li et al. (2023) study the impact of digital transformation on business innovation.

H4: Freedom of investment has a positive relationship with the growth of high-growth firms.

In turn, there is no doubt that innovation is one of the most representative factors of high-growth firms, as shown by the contributions of authors such as Amat, Renart and García (2013), Simbaña-Taípe et al. (2019) and Darwish (2022) among others. In fact, Hölzl (2009) concludes that innovation is more important for business growth the closer an economy is to the technological frontier. Thus, the fifth hypothesis focuses on assessing whether the development of innovative products is positively related to high-growth firms.

H5: The degree of creative and innovative product development has a positive relationship with the growth of high-growth firms.

On the other hand, contributions from previous literature (e.g., Palagashvili, 2015) point out that property rights play an important role in the entrepreneurial environment. Thus, the sixth hypothesis is based on assuming a positive relationship between the development of property rights and high-growth firms.

H6: The degree of development of property rights has a positive relationship with the growth of high-growth firms.

Regarding the seventh hypothesis, which relates the quality of institutions to high-growth firms, previous literature has developed valuable contributions that establish the importance of institutions (formal and informal) in the business environment (Cantwell, Dunning & Lundan, 2010), especially in the case of the of high-growth firms (Krasniqi & Desai, 2016; Fuentelsaz, González & Maicas, 2020; Diaz, 2022; or Erhardt, 2022).

H7: The degree of quality of institutions has a positive relationship with the growth of high-growth firms.

Human capital is one of the main factors conditioning business activity in an environment of continuous change, and high skill levels among managers and workers significantly enhance the likelihood of firms achieving high growth (Goswami, Medvedev & Olafsen, 2019). Hypothesis 8 therefore seeks to test the positive relationship between high-growth firms and human and research capital.

H8: The higher the quality of human resources and research, the higher the growth of high-growth companies.

Finally, as Goswami, Medvedev and Olafsen (2019) point out, infrastructures play an important role in the development of high-growth firms because these types of firms do not always appear in the same sectors and need not be common in high-tech industries. This is why Hypothesis 9 is based on the importance of infrastructure for high-growth firms.

H9: Infrastructure quality has a positive relationship with the growth of high-growth firms.

## 4 DATA AND METHODOLOGY

In order to test the specified assumptions, a panel data set of 18 Euro area countries has been designed. Greece is not included, as data are unavailable for the entire period under study, i.e., the years 2014 to 2020.

High-growth enterprises are considered to be those that have an average annualised growth in the number of employees of at least 10% per year over a three-year period and at least ten employees when growth starts. This definition is the one developed by Eurostat in the Commission Implementing Regulation (EU) No 439/2014 of 29 April 2014, amending Regulation (EC) No 250/2009, implementing Regulation (EC) No 295/2008 of the European Parliament and of the Council concerning structural business statistics, as regards the definitions of characteristics and the technical format for the transmission of data.

This definition of the high-growth firm based on its contribution to employment is consistent with previous contributions in the literature such as Lopez-Garcia and Puente (2012), OECD (2016) Queirós, Braga and Correia (2019), Flachenecker et al. (2020) and Benedetti et al. (2021).

Given the nature of the information used, panel data models are an appropriate methodology, since, as well as explaining the effect of the independent variables, they also capture heterogeneity across individuals or over time, reducing the collinearity of the explanatory variables. The general expression of this type of model is as follows:

$$y_{it} = \alpha_{it} + \beta X_{it} + \varepsilon_{it}$$

Where  $y_{it}$  the dependent variable for country  $i$  and year  $t$ ,  $\alpha_{it}$  the constant,  $X_{it}$  the independent variable for country  $i$  and year  $t$ , and  $\varepsilon_{it}$  the error term.

Table 1 presents the dependent and independent variables used in the estimation, which allow the hypotheses defined to be tested.

Note that, as shown in Table 1, the variables are not included in the models at the original levels: in all cases, Naperian logarithms are taken to homogenise the scale because of the diversity of metrics used. Likewise, for the dependent variable, the difference in logarithms is measured, so that the objective is to model the annual variation of high-growth firms in the different countries, in order to understand whether the independent variables are related to the evolution of this business segment.

Tab. 1 – Model variables. Source: own research

Variables	Description	Source	Data Treatment
High growth companies	Enterprises, for the total economy, that have an average annualised growth in the number of employees of at least 10% per year over a three-year period and at least ten employees when growth begins.	Eurostat	Difference in Naperian logarithms
GDP	Annual GDP growth in chained volumes.	Eurostat	Growth rate (%)
Credit as % of GDP	Domestic bank credit as a percentage of GDP.	World Bank	Naperian logarithms
Freedom of labour	Freedom to Work Index	Index of Economic Freedom (The Heritage Foundation)	Naperian logarithms
Freedom of investment	Business Freedom to Invest Index	Index of Economic Freedom (The Heritage Foundation)	Naperian logarithms
Property rights	Index measuring the degree of development of property rights.	Index of Economic Freedom(The Heritage Foundation)	Naperian logarithms
Creativity in products	An index that measures the degree of creativity of businessproducts and includes a measure of intangible assets,creative goods and services and online creativity.	The Global Innovation Index	Naperian logarithms
Quality of institutions	An index that measures the quality of a country's institutions according to the political environment, the regulatory environment and the business environment.	The Global Innovation Index	Naperian logarithms
Human capital and research	Index measuring human capital and research development based on generaleducation, higher education and the level of investment and development.	The Global Innovation Index	Naperian logarithms

Infrastructure	An index that measures the development of a country's infrastructure based on information and communication technologies, general infrastructure and ecological sustainability.	The Global Innovation Index	Naperian logarithms
----------------	---	-----------------------------	---------------------

## 5 RESULTS

Table 2 shows the statistical distribution of the variables used. Interesting conclusions can be drawn from this table, such as the heterogeneity between countries in relation to the volume of high-growth firms. Thus, while the average is approximately 6,195 firms, there is a large gap between the minimum (Cyprus in 2013) and the maximum (Germany in 2017).

Tab. 2 – Descriptive statistics of the model variables. Source: own research

Variable	Minimum	Maximum	Mean	Std. deviation
High growth companies	46	39.59	6.195,28	8.815,08
GDP	-11,30	24,40	1,86	3,93
Credit as % of GDP	32,44	255,19	84,76	38,26
Freedom of labour	3,43	4,39	4,055	0,19
Freedom of investment	65	95,00	82,43	7,78
Property rights	38,05	92,30	75,50	12,43
Creativity in products	30,70	73,70	47,32	8,16
Quality of institutions	71,40	95,80	81,39	5,86

Likewise, heterogeneity is also seen in terms of variables related to the economic environment. This is observed in the economic growth data, where, although the average is 1.86%, the lowest level is -11.3% during the strong recession Spain experienced in 2020 due to the consequences of the COVID-19 pandemic. On the other hand, the maximum is observed in Ireland in 2015, showing how a country with an intense economic crisis can recover and boost its growth to really high levels.

Similarly, the range of the figures for domestic bank credit as a % GDP shows the differences between the different banking systems in the Euro area. The minimum of 32% (for Ireland in 2020) shows a financial system with declining relative importance for the banking sector compared with others where the weight of banking is relatively high, as can be seen in the maximum value of 255%, referring to Cyprus in 2013.

On labour freedom, little difference can be seen between countries (an average of 4.05 versus a minimum value of 3.43 and a maximum of 4.38), which is due to a certain homogeneity in labour regulation across the Euro area.

The same is not true for variables of an institutional nature, such as property rights or the quality of institutions. For property rights, we observe an average of 75.49 and a maximum of 38 (Slovakia in 2013) against a maximum of 62 (Finland in 2020). Similarly, for the quality of institutions, a Euro area average of 81 is observed against a minimum of 71 (Lithuania in 2013) and a maximum of 95.8 (Finland in 2015).

Similarly, significant differences can be observed between countries on freedom of investment. Over the period studied, whereas the average is 82, the minimum (France in 2013) reaches a value of 65, and the maximum is 95, Luxembourg.

Differences also emerge in relation to the development of creative products. Here, although the average index value is 47, the lowest value is 30.7 (Slovenia in 2020), and the highest is 73.7 in Luxembourg in 2013.

On human capital and the degree of research, too, the results show wide ranges. Although the average index value is 47.86, the lowest and highest values are wide apart (from 31.2 in Slovakia in 2020 to 68.1 in Finland in 2016).

Finally, significant heterogeneity can also be observed in terms of infrastructure quality. Thus, while the average value is 55 for the region, there is a significant gap between the lowest value (37.6 for Cyprus in 2014) and the highest (66.7 for Ireland in 2018).

These results of the descriptive analysis demonstrate the heterogeneity in the economic and institutional structures of Euro area countries, despite the existence of a common regulatory and monetary framework and despite its being generally known that these differences may affect the development of high-growth firms.

Table 3 shows two estimates: one includes all the variables considered, the other includes only the statistically significant variables.

Tab. 3 – Estimated models. Source: own research

Initial model		Final model	
Variable	Coefficient	Variable	Coefficient
Constant	-20,2681 ** (7,44570)	Constant	-11,9705 *** (2,13832)
Var. GDP	0,0164907 ** (0,00739093)	Var. GDP	0,0173894 ** (0,00787498)
Credit/GDP	0,641250 *** (0,214104)	Credit/GDP	0,485309 *** (0,146743)
Freedom of labour	0,181765 (0,112909)	Freedom of labour	0,202513 ** (0,0941332)
Freedom of investment	1,64403 *** (0,343678)	Freedom of investment	1,44042 *** (0,297934)
Product creativity	0,703925 * (0,357034)	Product creativity	0,697448 * (0,345135)
Property rights	0,0710856 (0,179778)		
Institutions	0,996186 (1,24435)		
Human capital and research	0,0986997 (0,269701)		

Infrastructure	0,427715 (0,311759)		
----------------	------------------------	--	--

Test	P-value	Test	P-value
Hausman test	1,08445e-14	Hausman test	4,23522e-10
Wald test (heteroskedasticity)	9,68967e-179	Wald test (heteroskedasticity)	5,15629e-175
Wooldridge test (serial correlation)	0,691227	Wooldridge test (serial correlation)	0,759097
CD Pesaran (Cross- Sectional Dependence)	0,658059	CD Pesaran (Cross- Sectional Dependence)	0,116226

(Standard deviation in brackets. \*\*\* p<0.01; \*\* p<0.05; \*p<0.1)

The models presented in Table 3 have been estimated with robust standard deviations to correct for the effect of the heteroscedasticity detected and correspond to panel models with fixed effects, given the result of the Hausman test. Likewise, the analyses show that the resulting models have no problems of cross-sectional dependence or serial autocorrelation.

In terms of results, the initial estimation shows that infrastructure, human capital and research, property rights, quality of institutions and labour freedom are not statistically significant in the evolution of high-growth firms.

However, after the final model is estimated, labour freedom emerges as statistically significant. Therefore, the factors related to the evolution of high-growth firms are the weight of domestic bank credit on GDP, economic growth, labour flexibility, investment freedom and product innovation. These results would allow us not to reject the first, second, third, fourth and fifth hypotheses, as shown in Table 4, which summarises whether or not the hypotheses may be rejected based on the models developed.

Tab. 4 – Confirmed hypotheses. Source: own research

Hypotheses	Variable	Confirmed
Hypothesis 1	Economic growth	Yes
Hypothesis 2	Weight of domestic bank credit in GDP	Yes
Hypothesis 3	Labour freedom	Yes
Hypothesis 4	Freedom of investment	Yes
Hypothesis 5	Degree of creative and innovative product development	Yes
Hypothesis 6	Degree of development of property rights	No
Hypothesis 7	Degree of quality of institutions	No
Hypothesis 8	Quality of human resources and research	No

<b>Hypothesis 9</b>	Infrastructure quality	<b>No</b>
---------------------	------------------------	-----------

The result that the weight of financial credit is important for high-growth firms is supported by previous literature (Goswami, Medvedev & Olafsen, 2019) and highlights the importance of banking in the economic structure of the Euro area, where the degree of bankarisation of the financial system is a fundamental characteristic of the most important countries in the region.

Moreover, in line with contributions such as Du, Gong and Temouri (2013), economic growth is a determining factor in the evolution of high-growth firms; that is, this segment is driven by demand momentum.

The results also show that labour flexibility is positively related to high business growth, in line with the contributions of authors such as Henrekson (2014).

Finally, greater freedom of investment is shown to lead to greater development of high-growth firms. In fact, the investment in R&D that characterises this group of firms (Diaz, 2021; Ko, Lee & Seol, 2021) and that seems to be better exploited by these firms (Coad, Segarra & Teruel, 2016) also contributes to the generation of more creative and innovative products, which in turn also characterises this type of firm (Amat, Renart and García, 2013; Simbaña-Taípe et al., 2019; Darwish, 2022).

## 6 DISCUSSION

The basis of the theoretical framework of this work is the importance of the business environment (economic and institutional) for high-growth companies (Monteiro, 2018).

Although there is no doubt about the importance of the environment for any type of company, high-growth companies behave in particular ways, based on their capacity to grow rapidly and, therefore, on their job creation intensity. This is why it is essential to implement public policies to promote the dynamism of this segment.

Authors such as Monteiro (2018) have already pointed out the importance of public policymakers understanding the conditions for generating high-growth companies and the channels through which these companies bring dynamism to the economy.

These results demonstrate that public policies aimed at business growth are a determining factor for Euro-area countries. In line with what Giner, Santa-María and Fuster (2017) point out, public policies can be aimed at encouraging the creation of companies in high-tech industrial and service sectors, as this would help to generate more innovative products and would direct investment towards this type of company. Furthermore, given the importance that some authors attach to R&D investment (Coad, Segarra & Teruel, 2016; Diaz, 2021; Ko, Lee & Seol, 2021), the promotion of R&D activities seems necessary as an environmental factor to boost the growth of these firms (Giner, Santa-María & Fuster, 2017). The company's products and services are also a source of creativity and innovation, which is one of the factors that drive the development of high-growth companies. This highlights the importance of public policies aimed at improving the continuous training of companies (through tax incentives, for example) and at generating an innovative educational system oriented to professional realities.

The importance of bank financing is evident in the results obtained and is another source of dynamism on which to focus public policies. Authors such as Bravo-Biosca, Criscuolo and Menon (2014) emphasise how financial development and the degree of banking competition are associated with greater dynamism in the business environment. This is supported by Ferrando, Pal and Durante (2019), who point out that companies have greater financial needs in the initial stages of high growth. Likewise, Hyde (2021) points out the need for external financing in the face of internal financial constraints in high-growth companies, and highlights the importance of working capital management, especially during periods of economic crisis. This, in turn, highlights the importance of financing alternatives to banks to cover financial needs. These alternatives include online capital markets, marketplace lending, equity-based crowdfunding, reward-based crowdfunding, peer-to-peer lending and third-party-invoice trading payment platforms. In addition, public policy funding (e.g., through grants) has also proven to be a growth and sustainability factor for high-growth companies (McKenzie, 2017).

In this context, public policies can be approached from two points of view. On the one hand, given the importance of bank financing in the segment of high-growth companies, measures could focus on boosting competition in the banking sector and fostering the credit market for these companies, for example, through public guarantees. On the other hand, economic policies should focus on fostering financing alternatives by promoting competition but also through effective regulation aimed at protecting investors and financial consumers while avoiding generating inefficiencies in terms of competition with respect to banking.

Likewise, the results show that economic policies aimed at economic growth and labour flexibility are useful and allow for the strengthening of a business sector that, although it experiences episodes of growth that are difficult to sustain over time, does show a greater capacity for survival (Mogos, Davis & Baptista, 2021). Labour flexibility is especially important in terms of hiring qualified personnel, given the importance that the literature ascribes to qualified personnel as a lever for business growth (Puente, 2012), and given that this factor is one of the greatest limitations of these companies (Lee, 2014). Policies aimed at continuous training acquire a high degree of prominence in an environment of rapid change and uncertainty.

Finally, freedom of investment is equally important in the development of high-growth companies. Authors such as Procházka and Čermáková (2015) and Díaz-Casero et al. (2012) insist on the direct relationship between freedom of capital movement and business and entrepreneurial activity, and Fening and Beyer (2014) emphasise that freedom of investment is fundamental for business growth and development.

In short, the main implications of this work relate to the practice of economic policy. Public policymakers must generate a business environment conducive to high-growth companies' development and ability to survive.

To this end, they must implement policies aimed at improving bank financing channels while also generating an adequate framework for the development of alternative forms of financing, developing the necessary market and competition-oriented measures, all within an efficient regulatory framework. Moreover, promoting investment in research and development (for example, through training programmes or tax credits) becomes an essential factor for the generation of innovative and creative products.

Finally, from an institutional perspective, the development of an agile and flexible framework in terms of labour and investment will allow entrepreneurs to generate new ideas and launch companies with high growth potential.

## 7 CONCLUSIONS

The increasing relative importance of high-growth firms in the Euro area makes this business segment a lever of growth and productivity for the region. However, despite its growing importance in both the European business structure and the academic literature, this segment has only recently begun to receive academic attention.

This paper examines in depth the factors in the business environment that influence the evolution of this group of companies in the Euro area since the Great Recession, based on their contribution to employment. We analysed the economic and institutional environment factors that help us to understand the most appropriate economic policies to boost business growth, although finding general policies for this type of company is difficult because of the heterogeneity of this segment (Santa-María & Fuster, 2017).

The results show the importance of economic growth, bank credit, labour flexibility, investment freedom and the development of innovative and creative products for the performance of European high-growth firms. These results are consistent with previous literature pointing to the importance of macroeconomic conditions for business growth (Du, Gong & Temouri, 2013) and the financing factor as a lever for the growth of these firms, also known as gazelles. Also, these high-growth companies are characterised by a high degree of indebtedness (Bannò & Varum, 2021), and one of their main limitations is the difficulty of access to financing (Moreno & Casillas, 2007; Lee, 2014; Erhardt, 2022). This is why, given the importance of bank credit for this type of company, it is advisable to implement policies to facilitate financing for them, such as providing guarantees and collateral or alternative means of financing.

Interestingly, certain factors have been found to be statistically insignificant in the evolution of high-growth firms. Despite the importance of institutions as a factor in business growth (Krasniqi & Desai, 2016; Fuentelsaz, González & Maícas, 2020; Diaz, 2021; Erhardt, 2022), including especially property rights, they do not seem to be relevant in the case of the Euro area. This result may be mainly due to the fact that the Euro area is a region with a high institutional quality and tradition, which makes this factor less relevant from a national point of view, given the institutional homogeneity that Euro area countries demonstrate when integrating into the monetary union or the European Union itself. Therefore, the results do not suggest that this factor *per se* is unimportant, but rather that the development and quality of European institutions means that business activities are already conducted in a consolidated and stable framework, which gives greater prominence to other more differentiating factors.

Likewise, the quality of human resources does not seem to influence the evolution of high-growth firms. This result may seem surprising, given the importance in the development of high-growth companies that the literature has ascribed to human capital, and especially to employee satisfaction, motivation and competencies (Almus, 2002). However, while the variable included in the model is an indicator based on the importance of education and higher education in the economy, the literature emphasises the importance of improving the skills of professionals and their social attitudes (Wennberg, 2013). Therefore, formal education is not as important as the attitude of professionals to continuous learning and training, which explains the result obtained and the need to make progress in adapting educational systems to the reality

of business. However, differences in terms of labour flexibility in the case of the Euro area are more important when it comes to hiring professionals than their quality, which is a factor that shows greater homogeneity across the Euro area, due to the common educational policies across most of the Euro area (with the Erasmus programme as the main exponent).

Finally, the quality and development of infrastructure do not seem to be relevant factors for the high-growth segment, which may, in turn, be due to the growth of digital services and products that proliferate among high-growth technology companies.

The main limitation of the paper is the period of analysis used. In future studies, a larger number of observations will allow us to analyse the hypotheses developed in greater depth, especially by including various phases of the economic cycle. Also, including Croatia (which adopted the Euro in 2023) in future studies will allow us to improve the results and perhaps to develop a comparative analysis in this country between the periods before and after its joining the Euro area .

These conclusions, therefore, suggest interesting lines of future work. One is to try to understand better the relative importance, for the behaviour of high-growth companies, of the entry of a country into the Euro area and other environmental factors. Another is using a longer time period of data, which will help to distinguish between different moments in the economic cycle and allow us to study in depth the behaviour of these firms in the face of the pandemic. Finally, the extension of this study to other geographical regions will allow us to compare the Euro area with other regions, and thus to understand better which factors affecting high-growth firms are regionally distinctive and which are more generally applicable.

## 6 REFERENCES

1. Anton, A., Isa, M., Farid, M. F., & Permono, S. P. (2015). An assessment of SME competitiveness in Indonesia. *Journal of Competitiveness*, 7(2). DOI: 10.7441/joc.2015.02.04
2. Almus, M. (2002). What characterizes a fast-growing firm? *Applied Economics*, 34(12), 1497-1508. DOI: <https://doi.org/10.1080/00036840110105010>
3. Amat, O., Renart, M. A. & García, M. J. (2013). Factors that determine the evolution of high-growth businesses, *Intangible Capital*, 9(2), 379-391. DOI: <http://dx.doi.org/10.3926/ic.449>
4. Audretsch, D. B. (2012). *Determinants of high-growth entrepreneurship*. OECD. [https://www.oecd.org/cfe/leed/Audretsch\\_determinants\\_of\\_high-growth\\_firms.pdf](https://www.oecd.org/cfe/leed/Audretsch_determinants_of_high-growth_firms.pdf)
5. Bannò, M. & Amorim, C. (2021). Champions during crises scenarios: High growth and persistent high growth firms. *Research in Applied Economics*, 13(2), 1-22. DOI: <https://doi.org/10.5296/rae.v13i2.17461>
6. Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. DOI: <https://doi.org/10.1177/014920639101700108>
7. Baughn, C. C., Sugheir, J., and Neupert, K. E. (2008). Labor flexibility and the prevalence of high growth entrepreneurial activity, *Frontiers of Entrepreneurship Research*, 28(18). <http://digitalknowledge.babson.edu/fer/vol28/iss18/1>
8. Baumol, W. J. (1959). *Business behaviour, value and growth*. Harcourt, Brace and World.

9. Benedetti, F. (2021). *High growth enterprises in the COVID-19 crisis context: Demographics, environmental innovations, digitalization, finance and policy measures*. Publications Office of the European Union. DOI: 10.2760/63402
10. Birch, D. L., & Medoff, J. (1994). Gazelles. In L. Solmon and A. Levenson (Eds.), *Labor markets, employment policy and job creation* (ch. 4). Westview Press.
11. Bisztray, M., de Nicola, F., & Muraközy, B. (2022). High-growth firms' contribution to aggregate productivity growth. *Small Business Economics*, 60, 771-811. DOI: <https://doi.org/10.1007/s11187-022-00614-9>
12. Bosma, N., & Stam, E. (2012). *Local policies for high-employment growth enterprises*. OECD. [https://www.oecd.org/cfe/leed/Bosma-Stam\\_high-growth%20policies.pdf](https://www.oecd.org/cfe/leed/Bosma-Stam_high-growth%20policies.pdf)
13. Bravo-Biosca, A., Criscuolo, C., & Menon, C. (2014). What drives the dynamics of business growth? *Nesta Working Paper*, 14(03), 1-108. [https://media.nesta.org.uk/documents/1403\\_what\\_drives\\_the\\_dynamics\\_of\\_business-growth.pdf](https://media.nesta.org.uk/documents/1403_what_drives_the_dynamics_of_business-growth.pdf)
14. Caloghirou, Y., et al. (2020). Inside the black box of high-growth firms in a crisis-hit economy: Corporate strategy, employee human capital and R&D capabilities. *International Entrepreneurship and Management Journal*, 18, 1319-1345. DOI: <https://doi.org/10.1007/s11365-020-00674-x>
15. Cantwell, J., Dunning, J. H., & Lundan, S. M. (2015). An evolutionary approach to understanding international business activity: The co-evolution of MNEs and the institutional environment. In J. Cantwell (Ed.), *The eclectic paradigm*. Palgrave Macmillan. [https://doi.org/10.1007/978-1-137-54471-1\\_8](https://doi.org/10.1007/978-1-137-54471-1_8)
16. Chandler, A. D. (1962). *Strategy and structure: Chapters in the history of the industrial enterprise*. MIT Press.
17. Chanut-Guieu, C., & Guieu, G. C. (2014). High growth trajectories in small and medium sized enterprises: A comparative study. *Journal of Small Business and Enterprise Development*, 21(4), 623 – 637. DOI: <http://dx.doi.org/10.1108/JSBED-09-2014-0151>
18. Coad, A., Segarra, A., & Teruel, M. (2016). Innovation and firm growth: Does firm age play a role? *Research Policy*, 45(2), 387-400. DOI: <https://doi.org/10.1016/j.respol.2015.10.015>
19. Coad, A., Daunfeldt, S. O., & Halvarsson, D. (2018). Bursting into life: Firm growth and growth persistence by age. *Small Business Economics*, 50, 55-75. DOI: <https://doi.org/10.1007/s11187-017-9872-8>
20. Coad, A., & Srhoj, S. (2020). Catching gazelles with a lasso: Big data techniques for the prediction of high-growth firms. *Small Business Economics*, 55, 541-565. DOI: <https://doi.org/10.1007/s11187-019-00203-3>
21. Coad, A., & Karlsson, J. (2022). A field guide for gazelle hunters: Small, old firms are unlikely to become high-growth firms. *Journal of Business Venturing Insights*, 17, 1-7. DOI: <https://doi.org/10.1016/j.jbvi.2021.e00286>
22. Coad, A., Harasztosi, P., Pál, R., & Teruel, M. (2022). Policy instruments for high-growth enterprises. In K. Wennberg & C. Sandström (Eds.), *Questioning the entrepreneurial state*. Springer. DOI: [https://doi.org/10.1007/978-3-030-94273-1\\_15](https://doi.org/10.1007/978-3-030-94273-1_15)
23. Coad, A., et al. (2022). Capacity constraints as a trigger for high growth. *Small Business Economics*, 59, 893-923. DOI: <https://doi.org/10.1007/s11187-021-00558-6>
24. Colombo, V. (2013). Economic policy uncertainty in the US: Does it matter for the Euro area? *Economics Letters*, 121(1), 39-42. DOI: <https://doi.org/10.1016/j.econlet.2013.06.024>

25. Cruz, M., Baghdadi, L., & Arouri, H. (2022). High growth firms and trade linkages: Imports do matter. *Small Business Economics*, 59, 79–92. DOI: <https://doi.org/10.1007/s11187-021-00538-w>
26. Darwish, N. A. (2022). High-growth entrepreneurial firms in extreme context: The case of Palestine. *Businesses*, 1, 486–500. Doi: <https://doi.org/10.3390/10.3390/businesses2040031>
27. Dees, S., Mauro, F. D., Pesaran, M. H., & Smith, L. V. (2007). Exploring the international linkages of the euro area: A global VAR analysis. *Journal of Applied Econometrics*, 22(1), 1-38. <https://www.jstor.org/stable/25146503>
28. Delmar, F., Davidsson, P., & Gartner, W. B. (2003). Arriving at the high-growth firm. *Journal of Business Venturing*, 18(2), 189-216. DOI: [https://doi.org/10.1016/S0883-9026\(02\)00080-0](https://doi.org/10.1016/S0883-9026(02)00080-0)
29. Díaz-Casero, J. C., et al. (2012). Economic freedom and entrepreneurial activity. *Management Decision*, 50(9), 1686-1711. DOI: 10.1108/00251741211266750
30. Diaz Tautiva, J. A. (2022). Empirical research on high-growth entrepreneurship: A literature review and Latam research agenda. *Management Research*, 20(1), 39-58. DOI: <https://doi.org/10.1108/MRJIAM-09-2021-1231>
31. Du, J., Gong, Y., & Temouri, Y. (2013). High growth firms and productivity – Evidence from the United Kingdom. *Nesta Working Paper 13(04)*. [www.nesta.org.uk/wp13-04](http://www.nesta.org.uk/wp13-04)
32. Erhardt, E. C. (2022). Prevalence and persistence of high-growth entrepreneurship: Which institutions matter most? *Journal of Industry, Competition and Trade*, 22, 297–332. DOI: <https://doi.org/10.1007/s10842-022-00385-9>
33. Eurostat & OECD (2007). *Eurostat – OECD manual on business demography statistics*. OECD. <https://www.oecd.org/sdd/business-stats/Eurostat-oecdmanualonbusinessdemographystatistics.htm>
34. Felzensztein, C., et al. (2022). Do economic freedom, business experience, and firm size affect internationalization speed? Evidence from small firms in Chile, Colombia, and Peru. *Journal of International Entrepreneurship*, 20, 115–156. DOI: <https://doi.org/10.1007/s10843-021-00303-w>
35. Fening, F., & Beyer, H. (2014). An investigative framework of the importance of economic freedom for organizational survival. *International Journal of Business and Social Science*, 5(7), 9-18.
36. Ferrando, A., Pal, R., & Durante, E. (2019). Financing and obstacles for high growth enterprises: The European case. *EIB Working Paper 2019(03)*. [https://www.eib.org/attachments/efs/economics\\_working\\_paper\\_2019\\_03\\_en.pdf](https://www.eib.org/attachments/efs/economics_working_paper_2019_03_en.pdf)
37. Flachenecker, F., et al. (2020). *High growth enterprises: Demographics, finance and policy measures*. Publications Office of the European Union. DOI: 10.2760/34219
38. Frešer, B. (2022). Multidimensional model of high-growth companies: Do COVID-19 and the Ukraine–Russia crisis lead to differences? *Sustainability*, 14, 15278. DOI: <https://doi.org/10.3390/su142215278>
39. Fuentelsaz, L., González, C., & Maicas, J. P. (2021). High-growth aspiration entrepreneurship and exit: The contingent role of market-supporting institutions. *Small Business Economics*, 57, 473–492. DOI: <https://doi.org/10.1007/s11187-020-00320-4>
40. Gibrat, R. (1931). *Les inégalités économiques*. Librairie du Recueil Sirey, Paris.
41. Gilbert, B. A., McDougall, P. P., & Audretsch, D. B. (2006). New venture growth: A review and extension. *Journal of Management*, 32(6), 926-950. DOI: 10.1177/0149206306293860

42. Giner, J. M., Santa-María, M. J., & Fuster, A. (2017). High-growth firms: Does location matter? *International Entrepreneurship and Management Journal*, 13, 75–96. DOI: <https://doi.org/10.1007/s11365-016-0392-9>
43. Goswami, A. G., Medvedev, D. & Olafsen, E. (2019). *High-growth firms: Facts, Fiction, and Policy Options for Emerging Economies*. International Bank for Reconstruction and Development / The World Bank. DOI: 10.1596/978-1-4648-1368-9
44. Hechavarria, D., Bullough, A., Brush, C., & Edelman, L. (2019). High-growth women’s entrepreneurship: Fueling social and economic development. *Journal of Small Business Management*, 57(1), 5-13. DOI: <https://doi.org/10.1111/jsbm.12503>
45. Henrekson, M. (2014). How labor market institutions affect job creation and productivity growth. *IZA World of Labor*, 38, 1-10. DOI: 10.15185/izawol.38
46. Hözl, W. (2009). Is the R and D behavior of fast-growing SMEs different? Evidence from CIS III data for 16 countries. *Small Business Economics*, 33(1), 59-75. DOI: <https://doi.org/10.1007/s11187-009-9182-x>
47. Hözl, W. (2016). High growth firms in Europe. In Directorate-general for research and innovation, *Science, research and innovation performance of the EU* (pp. 247-275). [https://www.ewi-vlaanderen.be/sites/default/files/science\\_research\\_and\\_innovations\\_performance\\_of\\_the\\_eu.pdf](https://www.ewi-vlaanderen.be/sites/default/files/science_research_and_innovations_performance_of_the_eu.pdf)
48. Hyde, K. (2021). *Alternative finance strategies for small business sustainability and growth* [Doctoral Dissertation, Walden University]. <https://scholarworks.waldenu.edu/dissertations/10502>
49. Khatami, F., Scuotto, V., Krueger, N., & Cantino, V. (2021). The influence of the entrepreneurial ecosystem model on sustainable innovation from a macro-level lens. *International Entrepreneurship and Management Journal*, 18, 1419-1451. DOI: <https://doi.org/10.1007/s11365-021-00788-w>
50. Kiratli, O. S. (2022). Loving globalization: High-growth enterprises and public opinion on globalization in Europe. *European Union Politics*, 24(2). DOI: <https://doi.org/10.1177/14651165221138026>
51. Ko, C.-R., Lee, J. Y., & Seol, S.-S. (2021). Long-term growth patterns and determinants of high-growth startups - Focusing on Korean gazelle companies during 2006-2020. *Asian Journal of Innovation and Policy*, 10(3), 330–354. DOI: <https://doi.org/10.7545/AJIP.2021.10.3.330>
52. Krasniqi, B. A. (2012). Building an expanded small firm growth model in a transitional economy: Evidence on fast growing firms. *Journal of East-West Business*, 18(3), 231-273. DOI: <http://dx.doi.org/10.1080/10669868.2012.728903>
53. Krasniqi, B. A., & Desai, S. (2016). Institutional drivers of high-growth firms: Country-level evidence from 26 transition economies. *Small Business Economics*, 47, 1075–1094. DOI: <https://doi.org/10.1007/s11187-016-9736-7>
54. Lee, N. (2014). What holds back high-growth firms? Evidence from UK SMEs. *Small Business Economics*, 43, 183–195. DOI: <https://doi.org/10.1007/s11187-013-9525-5>
55. Li, S., Gao, L., Han, C., Gupta, B., Alhalabi, W., & Almakdi, S. (2023). Exploring the effect of digital transformation on firms’ innovation performance. *Journal of Innovation & Knowledge*, 8(1), 100317. DOI: <https://doi.org/10.1016/j.jik.2023.100317>
56. Lopez-Garcia, P., & Puente, S. (2012). What makes a high-growth firm? A dynamic probit analysis using Spanish firm-level data. *Small Business Economics*, 39, 1029–1041. DOI: <https://doi.org/10.1007/s11187-011-9321-z>

57. Marris, R. (1964). *The economic theory of managerial capitalism*. Free Press of Glencoe.
58. Mason, C., & Brown, R. (2013). Creating good public policy to support high-growth firms. *Small Business Economics*, 40, 211–225. DOI: <https://doi.org/10.1007/s11187-011-9369-9>
59. McKenzie, D. (2017). Identifying and spurring high-growth entrepreneurship: Experimental evidence from a business plan competition. *American Economic Review*, 107(8), 2278-2307. DOI: 10.1257/aer.20151404
60. Miller, D. (1988). Relating Porter's business strategies to environment and structure: Analysis and performance implications. *Academy of Management Journal*, 31(2), 280-308. DOI: <https://doi.org/10.2307/256549>
61. Mogos, S., Davis, A., & Baptista, R. (2021). High and sustainable growth: Persistence, volatility, and survival of high growth firms. *Eurasian Business Review*, 11, 135–161. DOI: <https://doi.org/10.1007/s40821-020-00161-x>
62. Monteiro, G. (2018). High-growth firms and scale-ups: A review and research agenda. *RAUSP Management Journal*, 54(1), 96-111. DOI: <https://doi.org/10.1108/RAUSP-03-2018-0004>
63. Moreno, A. M., & Casillas, J. C. (2000, May). *High-growth enterprises (gazelles): A conceptual framework* [Paper presentation]. International Conference of the European Academy of Management (EURAM), Stockholm.
64. Nicola, F., Muraközy, B., & Tan, S.W. (2021). Spillovers from high growth firms: Evidence from Hungary. *Small Business Economics*, 57, 127–150. DOI: <https://doi.org/10.1007/s11187-019-00296-w>
65. Nieto-Aleman, P. A., Ulrich, K., Guijarro-García, M., & Pagán-Castaño, E. (2023). Does talent management matter? Talent management and the creation of competitive and sustainable entrepreneurship models. *International Entrepreneurship and Management Journal*, 19, 1055-1068. DOI: <https://doi.org/10.1007/s11365-023-00833-w>
66. North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press.
67. OECD (2016). *Entrepreneurship at a glance 2016*. OECD Publishing. [http://dx.doi.org/10.1787/entrepreneur\\_aag-2016-en](http://dx.doi.org/10.1787/entrepreneur_aag-2016-en)
68. Ortigueira-Sánchez, L. C., Welsh, D. H., & Stein, W. C. (2022). Innovation drivers for export performance. *Sustainable Technology and Entrepreneurship*, 1(2), 100013. DOI: <https://doi.org/10.1016/j.stae.2022.100013>
69. Palagashvili, L. (2015). Entrepreneurship, institutions, and economic prosperity. In Boudreaux, et al. (Eds.), *What America's decline in economic freedom means for entrepreneurship and prosperity*. Fraser Institute, Mercatus Center at George Mason University.
70. Pearce, D. D., & Pearce II, J. A. (2020). Distinguishing attributes of high-growth ventures, *Business Horizons*, 63(1), 22-36. DOI: <https://doi.org/10.1016/j.bushor.2019.10.003>
71. Penrose, E. (1959). *The theory of the growth of the firm*. Wiley.
72. Piaskowska, D., Tippmann, E., & Monaghan, S. (2021). Scale-up modes: Profiling activity configurations in scaling strategies, *Long Range Planning*, 54(6), 1-17. DOI: <https://doi.org/10.1016/j.lrp.2021.102101>
73. Porter, M. E. (1981). The contributions of industrial organization to strategic management. *Academy of Management Review*, 6(4), 609–620. DOI: <https://doi.org/10.2307/257639>

74. Procházkaa, P., & Čermáková, K. (2015). Influence of selected institutional factors on the economic growth: Case open markets. *Procedia Economics and Finance* 30, 702 – 709. DOI: 10.1016/S2212-5671(15)01319-2
75. Queirós, M., Braga, V., & Correia, A. (2019). Cross-country analysis to high-growth business: Unveiling its determinants, 4(3), 146-153. DOI: <https://doi.org/10.1016/j.jik.2018.03.006>
76. Ramli, K., Spigel, B., Williams, N., Mawson, S. & Jack, S. (2023). Managing through a crisis: Emotional leadership strategies of high-growth entrepreneurs during the COVID-19 pandemic, *Entrepreneurship & Regional Development*, 35(1-2), 24-48, DOI: 10.1080/08985626.2022.2143905
77. Reypens, C., Delanote, J., & Rückert, D. (2020). From starting to scaling: How to foster startup growth in Europe. European Investment Bank. [https://www.eib.org/attachments/efs/from\\_starting\\_to\\_scaling\\_en.pdf](https://www.eib.org/attachments/efs/from_starting_to_scaling_en.pdf)
78. Rocha, R. G., & Ferreira, J. J. (2022). Gazelles (high-growth) companies: A bibliometric science map of the field. *Journal of the Knowledge Economy*, 13, 2911–2934 DOI: <https://doi.org/10.1007/s13132-021-00828-4>
79. Sallenave, J. P. (1984). *Dirección general et estrategia d'entreprise*. Les Editions d'Organisation, Paris.
80. Sharma, G. D., Kraus, S., Srivastava, M., Chopra, R., & Kallmuenzer, A. (2022). The changing role of innovation for crisis management in times of COVID-19: An integrative literature review. *Journal of Innovation & Knowledge*, 7(4), 100281. DOI: <https://doi.org/10.1016/j.jik.2022.100281>
81. Simbaña-Taípe, L. E., Ushiña, D. C., & Salas, M. (2019). Key determinants for growth in high-growth Ecuadorian manufacturing firms. *International Journal of Management and Enterprise Development*, 18(4), 293-315. DOI: 10.1504/IJMED.2019.10022926
82. Simionescu, M., Pelinescu, E., Khouri, S., & Bilan, S. (2021). The main drivers of competitiveness in the EU-28 countries. *Journal of Competitiveness*, 13(1), 129-145. DOI: <https://doi.org/10.7441/joc.2021.01.08>
83. Singh, A., & Whittington, G. (1975). The size and growth of firms. *Review of Economic Studies*, 42(1), 15–26. <https://doi.org/10.2307/2296816>
84. Tippmann, E., et al. (2023). Scale-ups and scaling in an international business context. *Journal of World Business*, 58(1), 1-10. DOI: <https://doi.org/10.1016/j.jwb.2022.101397>
85. Urbancová, H. (2013). Competitive advantage achievement through innovation and knowledge. *Journal of Competitiveness*, 5(1), 82-96. DOI: 10.7441/joc.2013.01.06
86. Wajsman, N., Kazimierczak, M., Ménière, Y., & Rudyk, I. (2019). High-growth firms and intellectual property rights: IPR profile of high-potential SMEs in Europe. European Patent Office - European Union Intellectual Property Office. [https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document\\_library/observatory/documents/reports/2019\\_High-growth\\_firms\\_and\\_intellectual\\_property\\_rights/2019\\_High-growth\\_firms\\_and\\_intellectual\\_property\\_rights.pdf](https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/reports/2019_High-growth_firms_and_intellectual_property_rights/2019_High-growth_firms_and_intellectual_property_rights.pdf)
87. Wennberg, K. (2013). Managing high-growth firms: A literature review. OECD. [https://www.oecd.org/cfe/leed/Wennberg\\_Managing%20a%20HGF.pdf](https://www.oecd.org/cfe/leed/Wennberg_Managing%20a%20HGF.pdf)

## Contact information

### **prof. Francisco del Olmo-García, Ph.D.**

Universidad de Alcalá  
Faculty of Economics, Business and Tourism  
Department of Economics and Business Administration  
Institute of Economic and Social Analysis (IAES)  
E-mail: francisco.olmo@uah.es  
ORCID: 0000-0001-7922-942X

### **prof. Fernando Javier Crecente-Romero, Ph.D.**

Universidad de Alcalá  
Faculty of Economics, Business and Tourism  
Department of Economics and Business Administration  
Institute of Economic and Social Analysis (IAES)  
E-mail: fernando.crecente@uah.es  
ORCID: 0000-0001-5728-1059

### **prof. María Sarabia-Alegría, Ph.D.**

Universidad de Alcalá  
Faculty of Economics, Business and Tourism  
Department of Economics and Business Administration  
Institute of Economic and Social Analysis (IAES)  
E-mail: maria.sarabia@uah.es  
ORCID: 0000-0002-6296-2243

### **prof. María Teresa del Val-Núñez, Ph.D.**

Universidad de Alcalá  
Faculty of Economics, Business and Tourism  
Department of Economics and Business Administration  
Institute of Economic and Social Analysis (IAES)  
E-mail: mteresa.val@uah.es  
ORCID: 0000-0001-6008-7935