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# Macroeconomic and institutional drivers of early failure among self-employed entrepreneurs: an analysis of the euro zone

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## ABSTRACT

The development of entrepreneurial activity is essential to achieve sustainable economic growth and development in the euro area. However, the European institutions have not given the same importance to the failure of entrepreneurial activity and its causes. With this in mind, and considering the countries of the euro area, on the basis of Eurostat's business demography data for the years 2008 to 2016, an analysis of panel data was conducted relating the early failure of self-employed entrepreneurs to their macroeconomic and institutional environment. The results thus show a negative relationship with respect to the quality of formal institutions, entrepreneurial culture and social norms, the efficiency of goods markets and entrepreneurial freedom. On the other hand, a positive relationship is shown with respect to the high status assigned to successful entrepreneurs.

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## KEYWORDS

Early failure; self-employed entrepreneurs; macroeconomic factors; institutions; euro zone

## 1. Introduction

There is no doubt, as witness the policies implemented over the last few years such as the Entrepreneurship Plan 2020 (European Commission, 2013), that the promotion of entrepreneurial activity is one of the basic pillars of the European Union's economic strategy. The European Commission itself considers entrepreneurship to be the key to ensuring economic growth, innovation, job creation and social integration in the Union itself (European Commission, 2019). Thus, in a multicultural and constantly changing environment such as the European Union, entrepreneurial activity must be oriented from the point of view of entrepreneurs who discover opportunities beyond their borders, but also from the point of view of increasingly important immigrant entrepreneurs who set up business projects in countries where they live. Thus, a global perspective must be adopted when talking about cross-border entrepreneurship instead of two different angles of vision (Emontspool & Servais,

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2017). In this sense, despite the cultural differences that exist in the European Union, whether due to differences between citizens of different member countries or between Europeans or immigrants, there is evidence that cultural barriers can be overcome, in terms of entrepreneurship through a combination of innovation and strategic planning (Rigtering et al., 2017).

However, in this context of promoting entrepreneurship within the European framework, we should not lose sight of the fact that entrepreneurial activity has an impact in the areas identified by the European Commission only in the case of success. Therefore, part of entrepreneurship strategy should be based not only on encouraging the launch of business projects, but also on developing the appropriate economic and institutional framework for their survival.

This is where the study of the failure of entrepreneurial activity comes to the fore, since it entails a financial and psychological cost from the outset for the entrepreneur himself, but also for his families, creditors and other interest groups among which society at large stands out (Eklund et al., 2020).

Thus, and following Tascón and Castaño (2012), the interest shown in the causes of business failure has only increased, so that various lines of research have been developed to delve into the various meanings of the concept of failure, the methodologies of analysis and the factors that explain the phenomenon, although the evidence regarding the influence of macroeconomic and institutional factors on business failure is still relatively scarce.

This paper attempts to provide evidence in this direction, by analysing the institutional factors that influence the failure of early entrepreneurial activity in the countries of the euro zone. Therefore, on the basis of a panel of data from the countries of the Eurozone for the period 2008–2016, the aim is to investigate the influence of factors of an institutional nature, taking the macroeconomic conditions of these countries as control factors. This approach has been used in the literature to analyse the influence of macroeconomic and institutional factors on entrepreneurship (Fuentelsaz et al., 2015, 2019).

It is this regional perspective in which this paper is framed, analysing the euro zone as an economic and monetary union made up of countries or regions, which in turn constitute realities characterized by different economic and institutional conditions deriving from different historical and cultural backgrounds. Thus, the euro zone is a union of countries that share a currency and supranational institutions. That has allowed for significant economic and institutional convergence, although not enough to eliminate existing heterogeneity in certain respects.

The reality of early entrepreneurial failure is one of those areas where the euro zone does not amount to a homogeneous unit. The same is true of the collective of self-employed entrepreneurs. It is an eloquent fact that 81% of entrepreneurs who start a business in the euro area are self-employed (they have no employees). It is also significant that 81% of undertakings that close each year are self-employed businessmen. Beyond the business dynamic, and from the point of view of the business population, 61% of companies in the euro area have no employees, which reflects the importance of this group within the European business structure.

## 2. Hypothesis: macroeconomic and institutional determinants of failure

The study of the causes of business failure has been one of the most prolific lines of research over the last few decades, resulting in evidence on the factors affecting business failure, among which those of an internal nature have predominated. However, as Tascón and Castaño (2012) indicate, the literature has not paid sufficient attention to other external factors, including those of a macroeconomic and institutional nature. As an example of the importance of these factors, Everett and Watson (1998) conclude from their analysis that economic factors appear to be associated with between 30% and 50% of small business failures, depending on the definition of failure used. In this sense, but also taking into account the firm age dynamics, Kücher et al. (2018) conclude that older companies are more exposed to external failure factors, such as economic slowdown.

However, partly due to the consequences of the 2008 financial and economic crisis, studies that take these factors into account in business failure models have increased over the past few years.

From a macroeconomic perspective, the literature has usually focused on variables such as GDP or the output gap (Benito et al., 2004; Carling et al., 2007; Contreras, 2016; Gaffeo & Santoro, 2009; Hol, 2007; Ptak-Chmielewska & Matuszyk, 2019), the level of unemployment (Acosta et al., 2019; Contreras, 2016; Everett & Watson, 1998, Buehler et al., 2012; Ptak-Chmielewska & Matuszyk, 2019; Tomas, 2016), the level of inflation (Acosta et al., 2019; Contreras, 2016; Liu, 2009), tax pressure (Buehler et al., 2012), interest rates (Everett & Watson, 1998, Tomas, 2016) or, the availability of credit (Altman, 1983; Liu, 2004, Tomas, 2016).

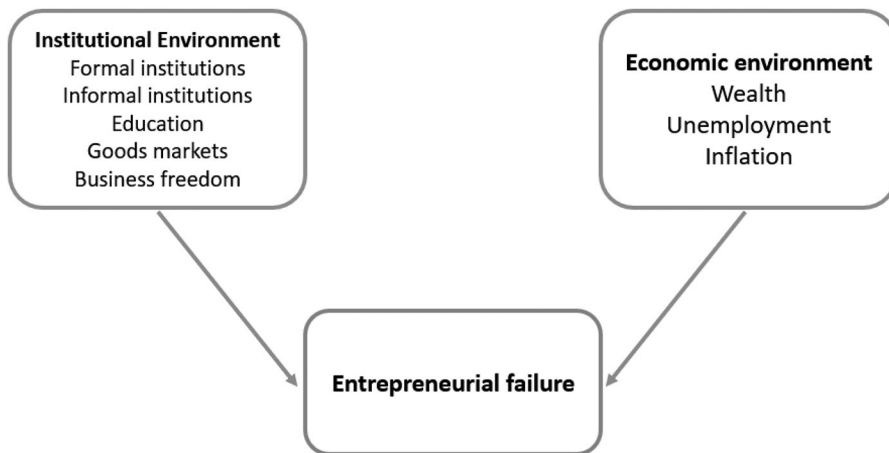
On the other hand, from a point of view of the importance of institutions on entrepreneurial activity and, necessarily, on business failure, during the last few decades the literature has increasingly directed its efforts towards clarifying the direction and intensity of this influence and the measures needed to promote entrepreneurship from an institutional perspective.

Thus, the institutional perspective on entrepreneurial activity points to the importance of institutions as a framework for action that establishes the appropriate structure for economic exchanges, while allowing for risk reduction and human interaction (North, 1990). Building on North (1990), the economic literature normally distinguishes between formal institutions, or those economic, political or legal rules that allow economic activity, and informal institutions, or those that have not been formally defined and are based mainly on cultural and ethical rules that characterize society.

In short, and adopting the approach underlying this review of the literature, this paper is based on the conceptual model described in Figure 1, so that the failure of entrepreneurial activity is influenced by the institutional and economic environment in which entrepreneurs operate.

### 2.1. Formal institutions

Institutions influence the characteristics and quality of entrepreneurial activity in such a way as to affect its greater or lesser productivity (Baumol, 1990; Bruton et al.,



Source: Own elaboration.

**Figure 1.** Conceptual model. *Source:* Own elaboration.

2010) and largely condition the likelihood of failure. As Fuentelsaz et al. (2019) point out, among the most important formal institutions are property rights, entrepreneurial freedom, corruption control and business regulation. Thus, the institutional environment is an important factor in entrepreneurial activity at all stages of a company's life cycle, and it is therefore assumed that it is also a key factor in the propensity of entrepreneurs to fail. As mentioned above, within the formal institutional environment, a fundamental aspect is the definition and protection of property rights, since, following Baumol (1990), it makes it possible to guarantee the appropriate incentives for entrepreneurs, who are compensated for the benefit they bring to society. According to Fuentelsaz et al. (2015), the so-called "rule of law" is included in regulatory protection, thus constituting the factor that prevents the entrepreneur from being expropriated (Levie & Autio, 2011) and having a substantially higher probability of failure. Therefore, it seems reasonable to assume that adequate definition and protection of property rights allows for a greater tendency for companies to survive or, at least, for creditors to be protected from business failure, as is shown in research by other authors such as Davydenko and Franks (2008).

On the other hand, the perception of corruption levels has been another of the pillars of research regarding relations between entrepreneurship and formal institutions. Thus, while Anokhin and Schulze (2009) conclude that entrepreneurial activity is more productive in economies that keep corruption under control, Jiménez et al. (2017) point out that corruption has negative effects on entrepreneurial activity, increasing the costs of the processes required in the creation and running of companies. In this sense, the difficulties that corruption implies in management can increase the probability of failure in the case of entrepreneurs characterised by their ethical quality. Despite the scarcity of studies into the way in which this factor conditions failure, there are examples for the Spanish case such as Contreras (2016), who analyses indicators on the level of corruption and the degree of compliance with contracts and their influence on business failure.

Therefore, given the above considerations, the following hypothesis regarding formal institutions is advanced in the paper:

H1: In countries with lower quality formal institutions there is a higher rate of early failure among the self-employed.

## **2.2. Informal institutions**

In line with North's distinction (North, 1990), informal institutions have not been defined in laws, but it is cultural and ethical values, as well as social norms, that characterize society. From an entrepreneurial point of view, there are numerous studies analysing the influence of issues related to informal institutions. Studies such as Álvarez and Urbano (2012) and Urbano and Álvarez (2014) show how informal factors, among which a culture favourable to entrepreneurship stands out, have a positive impact on entrepreneurship. As Thornton et al. (2011) suggest, informal institutions can even influence entrepreneurship more than formal institutions such as property rights, contracts, procedures and political structure.

It is therefore reasonable to think that informal institutions have an influence not only on entrepreneurial activity, but also on the propensity of entrepreneurs to fail.

Thus, the hypotheses advanced regarding informal institutions are as follows:

H2: In countries with a system of values and social norms that are not very conducive to entrepreneurial activity, there is a higher rate of early failure among the self-employed.

H3: In countries where successful entrepreneurs are accorded a higher social status, there is a lower rate of early failure among the self-employed.

## **2.3. Educational quality**

The importance of education and human capital in modern economies is beyond all doubt. From the point of view of entrepreneurial activity, authors such as Reynolds et al. (1999) state that national levels of entrepreneurial activity are directly related to investment in higher education. Similarly, Jiménez et al. (2015) conclude in their study that secondary and higher education enables an increase in formal (regulated) entrepreneurial activity as a result of greater confidence, lower risk perception and improved human capital, while higher education reduces informal (unregulated) entrepreneurial activity by increasing awareness of the risks involved in entrepreneurship. In this way, entrepreneurs with a higher level of education are able to exploit opportunities more successfully (Davidsson & Honig, 2003), so that an inverse relationship could be assumed between the level of education and the rate of entrepreneurial failure. García Martínez et al. (2019) transfer the debate from general education to corporate investment in human capital, showing a negative relationship between investment in human capital and business failure and that the human capital of companies made it possible to mitigate the effects of the financial crisis in terms of business failure. Similarly, Pennings et al. (1998) point to the importance of human and social capital as predictors of business failure, while Siepel et al. (2017) show the

relationship between business failure and growth and management training, highlighting the influence of this type of training at the different training stages on expectations of growth and on the very likelihood of business survival.

Thus, this paper advances the following hypothesis on educational quality:

H4: In countries with higher quality education, there is a lower rate of early failure among the self-employed.

## **2.4. Commodity market efficiency**

For its part, the efficiency and competitive structure of markets is a factor that influences entrepreneurs and, in turn, is influenced by them (Clemens, 2006; Dean & McMullen, 2002). Thus, it is reasonable to think that greater efficiency of commodity markets leads to higher rates of entrepreneurship per opportunity and, ultimately, to a lower propensity for entrepreneurial failure. This leads to the following working hypothesis:

H5: In countries with more efficient commodity markets, there is a lower rate of early failure among self-employed entrepreneurs.

## **2.5. Business freedom**

Finally, a key factor in the development of entrepreneurial activity is entrepreneurial freedom, which refers to the degree of simplification in the administrative processes and regulations that accompany business activity throughout its life cycle (Miller et al., 2019). In this sense, regulatory complexity seems to be a barrier to entry to entrepreneurial activity (Fuentelsaz et al., 2015; Klapper et al., 2006), with Spencer and Gómez (2004) highlighting that the regulatory environment has a negative influence on the entrepreneurial activity of the self-employed.

Thus, regulation is a key factor in entrepreneurial activity, influencing all stages of it in such a way that it can significantly influence the processes of business failure, proposing, therefore, the following hypothesis:

H6: In countries with a higher perception of entrepreneurial freedom, there is a lower rate of early failure among the self-employed

## **3. Sample, method and variables**

### **3.1. Sample and method**

In the literature on business failure, the use of data dashboards has been common, although analyses based on business data have predominated. In this regard, Hunter and Isachenkova (2002) analyse panel data of British industrial companies to analyse financial factors affecting business failure. Similarly, Lukason (2012) uses a panel of data from Estonian companies to analyse whether companies with different characteristics differ in their pre-failure behaviour. On the other hand, Aleksanyan and Huiban (2016) analyse the failure behaviour of the French food industry compared to

other industries through a panel of companies. In turn, Kenney et al. (2016) analyse business failure through a panel of Australian public and private company data using financial and structural factors. In turn, García Martínez et al. (2019) use a panel of data from Spanish manufacturing and service companies to analyse the effect of internal innovation capabilities and external knowledge resources on business failure.

Beyond the strictly business analysis, Claessens and Klapper (2005) use a country panel to analyse the relationship between business failure and certain institutional factors such as creditor rights and judicial efficiency.

For their part, on the basis of regional analysis, Gaffeo and Santoro (2009) use a panel of Italian regions and, with the aid of co-integration methodologies, conclude that macroeconomic risk factors affect business failure in both the short and long term. In turn, Succurro (2008) studies the relationship between insolvency systems and the proportion of investment in GDP across different countries, using dynamic data panels.

The hypotheses advanced in this paper have been tested with panel data composed of 15 euro-zone countries for the period 2008 to 2016 with data obtained from Eurostat's Business Demography statistics. Ireland, Greece, Cyprus and Malta have been excluded because complete information on the business failure rate is not available for this period.

As for the methodology, the use of panel data allows for the application of data panel models that not only reflect the effect of the independent variables, but also capture the heterogeneity between individuals or over time, thereby reducing the collinearity of the explanatory variables.

After the relevant analyses as shown in the results section, a random effects model is the appropriate model. Thus, the constant  $\alpha_{it}$  is considered as a random variable that can be decomposed into a constant part  $\alpha$  and a random part  $\epsilon_i$ , which depends on the  $i$ -th country but not on time, remaining constant with respect to it. In this way, the model can be expressed as follows:

$$y_{it} = \alpha_{it} + \beta X_{it} + \varepsilon_{it} = \alpha + \epsilon_i + \beta X_{it} + u_{it} = \alpha + \beta X_{it} + \omega_{it}$$

where

$$\omega_{it} = \epsilon_i + u_{it}$$

represents the two unobservable components. Likewise,  $y_{it}$  represents the early entrepreneurial mortality rate for each country and year, while  $X_{it}$  represents the set of independent variables for each time  $t$  and country, in this case the macroeconomic control variables and the institutional variables.

### 3.2. Dependent variable

As stated above, the aim of this paper is to study the impact of institutional factors on the early mortality of self-employed entrepreneurs. In order to quantify the concept of early mortality, the one-year mortality rate of self-employed entrepreneurs, i.e.



those who have no employees, has been used, taking into account the activities classified as Business economy except activities of holding companies.

The mortality rate is defined as the number of self-employed entrepreneurs who, having set up their project in year  $t$ , have failed during year  $t + 1$ , in relation to the entrepreneurial projects set up in year  $t$ . However, through Eurostat data, information is obtained on the survival rate, so that the mortality rate is calculated as follows:

$$1 - TS^{t+1}$$

where:

$$TS^{t+1} = \frac{S^{t+1}}{R^t} \times 100$$

Taking into account that  $S^{t+1}$  is number of entrepreneurial projects started by self-employed entrepreneurs in year  $t$  and that have survived to year  $t + 1$  and  $R^t$  the number of entrepreneurial projects started by self-employed entrepreneurs in year  $t$ .

The study of the early mortality rate is particularly significant in the field of financial risk management practice in the banking system, both from the prudential (Basel Accords) and accounting (IFRS 9 accounting standard) viewpoints.

### **3.3. Independent variables**

The dependent variables used in this paper can be divided into two groups: macro-economic control variables and institutional contrast variables.

On the one hand, the macroeconomic control variables collect the main economic factors that influence the early failure of self-employed entrepreneurs from an aggregate perspective. Thus, based on the experience gained in the analysis of previous literature, per capita GDP, the unemployment rate and the level of inflation have been used as the control variables for inclusion in the models. In addition, other variables have also been studied, such as the effective tax burden on companies, the level of bank credit over GDP or its inter-annual evolution, or GDP growth, although with unsatisfactory results in terms of statistical significance, so that they have not been taken into account in the development of the work. Other variables used in the literature, such as interest rates, are not appropriate given the nature of the work, which focuses on analysing the heterogeneities among the countries of the Eurozone, whose monetary policy is common.

On the other hand, institutional quality indicators representative of the hypotheses to be tested have been used as independent variables. [Table 1](#) identifies the control and independent variables used, their definition and the source of the data.

Given the confusion that can exist when talking about the terms (“formal institutions”, “quality of education” and “efficiency of goods markets”) and understanding the concepts involved that are of interest to entrepreneurs, [Table 2](#) shows the indicators that “The Global Competitiveness Index” includes in the magnitudes used in this work.

**Table 1.** Independent variables definition.

Variable	Description	Source
Unemployment rate	Percentage of unemployed workers in the total labor force	Eurostat
GDP per capita	Relation between country's economic output and its population	Eurostat
Inflation rate	Consumer price index year on year growth change	Eurostat
Formal institutions	Formal institutions quality	The Global Competitiveness Index (World Bank)
Cultural and social norms	The extent to which social and cultural norms encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income	Global Entrepreneurship Monitor
High status to successful entrepreneurs	Percentage of 18–64 population who agree with the statement that in their country, successful entrepreneurs receive high status	Global Entrepreneurship Monitor
Education quality	Education system and trainee activities quality	The Global Competitiveness Index (World Bank)
Goods market efficiency	Market efficiency (competency control, tax policies, regulation, product sophistication)	The Global Competitiveness Index (World Bank)
Business freedom	An individual's ability to establish and run an enterprise without undue interference from the state	Index of economic freedom (Heritage Institute)

Source: Own elaboration.

**Table 2.** Institutional indicators description.

Variable	Indicators
Formal institutions	Property rights; Intellectual property protection; Diversion of public funds; Public trust in politicians; Irregular payments and bribes; Judicial independence; Favoritism in decisions of government officials; Wastefulness of government spending; Burden of government regulation; Efficiency of legal framework in settling disputes; Efficiency of legal framework in challenging regulations; Transparency of government policymaking; Business costs of terrorism; Business costs of crime and violence; Organized crime; Reliability of police services; Ethical behavior of firms; Strength of auditing and reporting standards; Efficacy of corporate boards; Protection of minority shareholders' interests; Strength of investor protection
Education quality	Secondary education enrollment rate; Tertiary education enrollment rate; Quality of the education system; Quality of math and science education; Quality of management schools; Internet access in schools; Local availability of specialized training services; Extent of staff training
Goods market efficiency	Intensity of local competition; Extent of market dominance; Effectiveness of anti-monopoly policy; Effect of taxation on incentives to invest; Total tax rate; Number of procedures required to start a business; Time required to start a business; Agricultural policy costs; Prevalence of non-tariff barriers; Trade tariffs; Prevalence of foreign ownership; Business impact of rules on FDI; Burden of customs procedures; Imports as a percentage of GDP; Degree of customer orientation; Buyer sophistication

Source: The Global Competitiveness Index (World Bank).

As can be seen in the detail of [Table 2](#), by formal institutions we mean behaviours regulated by laws and procedures (North, 1990), including indicators relating to the protection of property rights, the efficiency of the legal framework and the independence of the judiciary, government behaviour (corruption, transparency and regulation), violence and terrorism, as well as the quality of corporate governance, ethics and the protection of investors and shareholders.

Similarly, the indicators of education quality include magnitudes relating to the quality of secondary and higher education and specific training, as well as the quality of educational infrastructure (Internet access).

**Table 3.** Descriptive statistics.

	Minimum	Maximum	Mean	Std. deviation
Self-employed entrepreneur's failure	0.0511	0.7223	0.2147	0.1134
Unemployment rate	0.0370	0.2610	0.0976	0.0460
GDP per capita	-0.1429	0.0889	0.0038	0.0366
Inflation rate	-0.0122	0.1525	0.0182	0.0219
Cultural and social norms	1.8800	3.7800	2.5876	0.4199
High status to successful entrepreneurs	46.2600	89.5500	67.2493	9.7770
Formal institutions	3.3176	6.1824	4.7172	0.7965
Education quality	3.7157	6.1711	4.8809	0.5887
Goods market efficiency	4.1151	5.5368	4.7426	0.3830
Business freedom	64.9000	95.1000	80.9111	6.9786

Source: Own elaboration.

Finally, commodity market efficiency includes, basically, those indicators relating to the existence and intensity of competition, as well as the efficiency of anti-monopoly policy; together with incentives to invest and trade (barriers, taxes, tariffs), trade intensity, foreign ownership of firms and consumer sophistication and orientation.

Entering into the detail of the variable distribution, [Table 3](#) shows the basic descriptive information of these control and independent variables.

In relation to the information contained in [Table 3](#), a series of comments are in order. Firstly, while the average early failure rate of the self-employed is 21%, the maximum is 72%. There is no doubt that the heterogeneity of behaviour underlying these data justifies the nature of this study, although it is true that the standard deviation is not particularly high.

Secondly, the macroeconomic control variables show the smallest standard deviations in the Table, so that economic conditions in the euro zone do not show high heterogeneity, which is undoubtedly a result of the financial stability and monetary policy rules common to all countries.

Thirdly, the institutional indicators show the highest standard deviations in the Table, while not losing sight of the different scales on which the indicators are measured. This represents the important difference between the institutions of the euro member countries, whose homogenisation is neither easy nor quick, given their diverse historical evolutions and cultural differences.

For the purposes of interpretation, all institutional magnitudes are represented by a scale of scores, so that the higher the score, the better the quality assigned to this factor.

Fourthly, [Table 4](#) shows the correlations between the variables and highlights the high correlation between the early failure of self-employed entrepreneurs and the efficiency of the commodity market, which is close to 50%. The high correlation between the latter and the unemployment rate (68%) is also noteworthy.

From the point of view of the informal institutions, neither the culture and social norms nor the high status of the entrepreneurs turn out to correlate significantly with the early failure rate of the entrepreneurs. However, despite this result, both magnitudes will be included in the models in order to test the significance hypothesis beyond the possible correlation. The sign of the coefficient is also interesting, since the high status of successful entrepreneurs is positive with respect to the failure rate. But since this is not a significant correlation, this result should be taken with caution.

**Table 4.** Correlations matrix.

	Self-employed entrepreneur's failure	Unemployment rate	GDP per capita	Inflation rate	Cultural and social norms	High status to successful	Formal institutions	Education quality	Goods market efficiency	Business freedom
Self-employed entrepreneur's failure	1.000									
Unemployment rate	0.396**	1.000								
GDP per capita	0.010	0.001	1.000							
Inflation rate	0.204*	-0.137	-0.043	1.000						
Cultural and social norms	-0.85	-0.211**	0.161	-0.055	1.000					
High Status to Successful Entrepreneurs	0.71	-0.430**	-0.217**	0.170	-0.064	1.000				
Formal institutions	-0.359**	-0.575**	-0.098	0.010	0.416**	0.420**	1.000			
Education quality	-0.365**	-0.439**	-0.006	-0.041	0.399**	0.215**	0.777**	1.000		
Goods market efficiency	-0.498**	-0.680**	-0.030	-0.023	0.443**	0.167	0.875**	0.702**	1.000	
Business freedom	-0.119	-0.095	-0.019	0.008	0.221**	0.153	0.375**	0.510**	0.278**	1.000

\*\* $p < 0.01$ ; \* $p < 0.05$ .

Source: Own elaboration.

**Table 5.** Initial model with macroeconomic control variables.

	Coefficients	Std. error	t-value	P-value
Intercept	0.1367	0.0299	4.5723	1.10e-05
Unemployment rate	0.6431	0.1757	3.6588	0.0003
Inflation rate	0.8968	0.2005	4.4732	1.65e-05
GDP per capita	-0.2864	0.1154	-2.4820	0.0143
R <sup>2</sup>	0.2140			<b>P-value</b>
		Breusch-Pagan test		1.28e-068
		Hausman test		0.1544
		Pesaran CD test		0.03715
		Breusch-Godfrey/Wooldridge test		0.0930
		Augmented Dickey-Fuller test		0.0430
		Heteroskedasticity Breusch-Pagan test		0.0011

Source: Own elaboration.

Finally, the correlation between GDP per capita and the dependent variable is low and counter-intuitively signed contrary to expectations. However, as these are not significant correlations, the result should also be taken with caution with an eye to the impact of the variable on the model.

#### 4. Results

Given the nature of the data, a panel data model has been estimated for fifteen euro-zone countries and nine time periods (2008–2016), for which the aim is to model the early business failure variable against institutional magnitudes, establishing the countries' macroeconomic conditions as control variables. To this end, firstly, a model based on the control variables of a macroeconomic nature has been estimated (Table 5).

Table 5 shows the result of the estimation by means of random effects and makes it possible to reach the following conclusions:

- The macroeconomic magnitudes that have proved significant are the unemployment rate, the inflation rate and the year-on-year variation in per capita GDP. The first two variables show a positive coefficient, which means that an increase in the unemployment rate or in the price level causes an increase in the failure rate. With regard to the variation in per capita GDP, the coefficient is negative, which means that an increase in wealth makes it possible to reduce the failure rate.
- Other variables of a macroeconomic nature have been tested but have not proved to be significant: rate of change in GDP, effective tax burdens, volume of credit over GDP or rate of growth of the volume of credit over GDP.
- By rejecting the null hypothesis of the Breusch-Pagan test of Lagrangian multipliers with a significance level of 1%, there prove to be significant differences between countries. Also, a random-effects model proves to be adequate compared to an ordinary least-squares model.
- Since the null hypothesis of Hausman's contrast with a 1% significance level cannot be rejected, it is convenient to use a random-effects model as opposed to a fixed-effects model.

**Table 6.** Initial model with macroeconomic control variables and heteroskedasticity consistent covariance matrix.

	Coefficients	Std. error	t-value	P-value
Intercept	0.1367	0.0259	5.2691	5.48e-07
Unemployment rate	0.6431	0.1662	3.8682	0.0001
Inflation rate	0.8968	0.2498	3.5901	0.0004
GDP per capita	-0.2864	0.2368	-1.2091	0.2287

Source: Own elaboration.

- On the other hand, since it is not possible to reject the null hypothesis of Pesaran Hausman's CD contrast with a 1% significance level, the model is considered to have no cross-dependence limitations.
- Likewise, the Breusch-Godfrey/Wooldridge test allows to contrast the existence of serial dependence. Since it is not possible to reject this hypothesis, it is concluded that the model has no problems of this nature.
- The existence of unitary roots would imply the non-seasonality of the series and the existence of a trend. The result of the Augmented Dickey-Fuller test allows us to reject, at 5% significance, the hypothesis of the existence of unitary roots.
- On the other hand, the Breusch-Pagan heteroscedasticity test indicates the possible existence of heteroscedasticity by rejecting the null hypothesis at a 1% significance level. Thus, to avoid this problem affecting the model, the White1 (HC0) method is applied, which allows the matrix of variances and covariances to be estimated robustly to heteroscedasticity. The result of this estimation is shown in [Table 6](#).

Once the problem of heteroscedasticity had been dealt with, the results in [Table 6](#) led to the rejection of the use of variation in per capita GDP due to lack of significance. Therefore, the control variables finally used in the models are the unemployment rate and the inflation rate.

Thus, on the basis of the model estimated with macroeconomic control variables, the hypotheses defined in the work were tested with the aid of the variables of an institutional nature. [Tables 7a](#) and [7b](#) show the results of these estimations, showing the estimated models that allow for contrasting the work hypotheses and that are based on the model with control variables previously estimated. It should be noted that the models presented are already estimated with matrices of variances and covariances in a robust way, in order to correct for the problem of heteroscedasticity detected in all models except 1 and 2, for which no correction for problems of heteroscedasticity was necessary.

In models 1 and 2, related to the influence of informal institutions, inflation as a control variable was not statistically significant; only the unemployment rate remained as a control variable. In the rest of the models, inflation was significant.

Thence, the results shown allow us to reach several conclusions:

Firstly, the values that characterise the societies studied, and which are part of their culture and social norms, have a significant influence on the rate of early failure of entrepreneurs, so that in societies where there is a culture of encouraging entrepreneurship, entrepreneurs are less likely to fail in the short term. Therefore, the promotion of values related to entrepreneurship, as well as a social and cultural framework

**Table 7a.** Institutional factors of self-employed entrepreneur's failure.

	Model 0	Model 1	Model 2	Model 3
Cultural and social norms		-0.0369** (0.0163)		
High status to successful entrepreneurs			0.0021** (0.0010)	
Formal institutions				-0.0503* (0.0214)
Intercept	0.1315*** (0.02476)	0.2474*** (0.0540)	-	0.3878*** (0.1149)
Unemployment rate	0.6762*** (0.1785)	0.5896*** (0.1654)	0.5992*** (0.1904)	0.4872** (0.1875)
Inflation rate	0.9432*** (0.2764)	-	-	0.9335*** (0.2621)
R <sup>2</sup>	0.1769	0.2020	0.1869	0.2030
Breusch-Pagan test	1.29e-069	2.43e-035	1.46e-022	1.23e-070
Hausman test	0.3898	0.4032	0.3756	0.6026
Pesaran CD test	0.1412	0.2268	0.5351	0.1882
Breusch-Godfrey/Wooldridge test	0.0930	0.1093	0.0479	0.0883
Augmented Dickey-Fuller test	0.0430	0.0430	0.0430	0.0430
Heteroskedasticity Breusch-Pagan test	0.0100	0.5947	0.4277	0.0080

(Standard deviation in brackets).

\*\*\*p &lt; 0.01; \*\*p &lt; 0.05; \*p &lt; 0.1.

(In the case of tests, it is shown its P-value).

Source: Own elaboration.

**Table 7b.** Institutional factors of self-employed entrepreneur's failure.

	Model 4	Model 5	Model 6
Goods market efficiency	-0.069* (0.039)		
Education quality		-0.0273 (0.0295)	
Business freedom			-0.0027** (0.0012)
Intercept	0.4885** (0.1987)	0.2679* (0.1442)	0.3587*** (0.0984)
Unemployment rate	0.4293** (0.1800)	0.6554*** (0.1674)	0.6309*** (0.1753)
Inflation rate	0.8441*** (0.2964)	0.8870*** (0.3015)	0.9471*** (0.2669)
R <sup>2</sup>	0.2005	0.1866	0.2018
Breusch-Pagan test	6.85e-067	5.95e-069	6.78e-066
Hausman test	0.5955	0.6039	0.6520
Pesaran CD test	0.0369	0.1051	0.3934
Breusch-Godfrey/Wooldridge test	0.1141	0.0894	0.1548
Augmented Dickey-Fuller test	0.0430	0.0430	0.0430
Heteroskedasticity Breusch-Pagan test	7.46e-05	0.0077	0.0046

(Standard deviation in brackets).

\*\*\*p &lt; 0.01; \*\*p &lt; 0.05; \*p &lt; 0.1.

(In the case of tests, it is shown its P-value).

Source: Own elaboration.

conducive to it, is important not only to increase the rate of entrepreneurship, but also to reduce the failure of business projects.

Secondly, in societies that consider successful entrepreneurs to have a higher social status, the rate of early failure of entrepreneurial activity has been found to be higher, with the relationship being statistically significant. This result, surprisingly enough, leads to the rejection of the hypothesis put forward in the paper according to which

the rate of short-term entrepreneurial failure would be lower in those societies that consider successful entrepreneurs to have a higher social status. However, this result has an explanation. Faced with the objective of achieving higher social status, many people try to start a business project without sufficient qualifications or without a real market opportunity. Hence, these people are more likely to fail and, paradoxically, not achieve the desired status.

Thirdly, a higher formal institutional quality prevents an increase in early entrepreneurial failure, so that those countries where institutions related to property, investor and shareholder protection, the efficiency and independence of the justice system, the fight against terrorism or criminal activities and adequate public and corporate governance based on ethical rules rather than corruption are more developed, will provide a better framework of action for the sustainable development of entrepreneurial projects.

As for the efficiency of commodity markets, this significantly and negatively affects the propensity for early failure, so that further development of competition and anti-monopoly rules, together with the encouragement and reduction of barriers to trade, among other factors, allows entrepreneurs to develop their business in a more sustainable way than when no such measures are in place.

Fourthly, the quality of secondary and higher education, together with the quality of more specific training, is not statistically significant in terms of propensity to fail. Thus, higher quality education and training do not imply a lesser likelihood of failure since other factors studied in this paper have an influence on the phenomenon studied.

Fifthly, entrepreneurial freedom has a significant and negative influence on the propensity to fail. It is not surprising, then, that the ability to start a business and make it work without excessive state interference helps entrepreneurs to develop their project in a sustainable way.

Finally, it should be noted that the fit of the models is close to 20%, measured using the R<sup>2</sup> indicator. Thus, approximately 20% of early entrepreneurial failure is based on the conditions of the economic and institutional environment of the company, without taking into account the economic-financial or sectoral factors that influence it and which have been thoroughly studied in the literature (Tascón & Castaño, 2012).

## 5. Conclusions

Throughout this paper, a fundamental issue has been highlighted that has not always been treated in the literature on business failure with the importance it deserves: businesses fail not only because of their strategic decisions, economic-financial situation or resources and capabilities, but also because of the external factors that characterize the business environment, especially of a macroeconomic and institutional nature.

Likewise, and independently of the importance given to the promotion of entrepreneurial activity by the European institutions, the analysis of the failure of this activity in the European Union has not been deemed sufficiently important, despite the need to create an environment that is not only conducive to the development of entrepreneurial activity, but also to the sustainability of the projects implemented over time



and the achievement of the objectives set out in the European framework: ensuring economic growth and job creation, as well as innovation and social integration.

This paper falls within those lines of research which aim to understand the causes of the failure of self-employed entrepreneurs, but under an approach oriented to the analysis of the business environment, so that the causes of macroeconomic and institutional nature which affect the failure are studied. In this way, we start with a panel of data composed of information from the countries of the euro area for the period 2008–2016 and analyse, through panel data models, the factors of the business environment that have a bearing on the early failure of self-employed entrepreneurs. As self-employed entrepreneurs, we considered those companies that do not have employees under their charge and that have started up in each year of analysis, defining as failures those that have closed during the first year of activity (early failure).

On this definition of failure, models were developed with the aim of contracting the influence of different institutional factors on the propensity for early failure. To this end, the models were supported, in turn, by macroeconomic control variables that reflected the conditions of the economic environment that influenced the propensity to fail. These variables were the inflation rate and the unemployment rate.

The variables of an institutional nature to be contrasted have been: quality of formal institutions, informal institutions such as the culture and social norms that prevail in the countries analysed, as well as the high social status assigned to successful entrepreneurs. In addition, and more specifically, the quality of educational institutions, the efficiency of goods markets and entrepreneurial freedom have also been studied.

Of the above institutional factors, the quality of formal institutions, the culture and social norms, the efficiency of the goods market and entrepreneurial freedom were statistically significant and with expected signs, while the quality of education was not significant. In turn, the result regarding the high status of successful entrepreneurs was surprising and highlighted the fact that the higher the status granted by society to successful entrepreneurs, the higher the rate of early failure of entrepreneurs. This conclusion was attributed to the fact that many entrepreneurs start a project only with the aim of achieving the desired social status, but without any business grounding that would make the project sustainable over time.

In short, along with the economic environment, the influence of institutions is crucial to the sustainability of entrepreneurial projects launched by self-employed entrepreneurs within the euro zone. Thus, the countries with the highest quality of formal institutions, a value system prone to promoting the entrepreneurial spirit, greater efficiency in their goods markets and a greater perception of freedom are those that have established an environment conducive to the sustainable growth of entrepreneurial projects.

These conclusions should prompt the competent authorities to reflect, so that they can implement measures aimed at developing an economic and institutional framework for action that is appropriate not only for the promotion of entrepreneurial projects, but also for their sustainability over time.

Finally, based on the conclusions obtained in this work and others related, it would be interesting for future research to analyse the relationship between the

failure of managerial activity and the institutional factors that characterize the national entrepreneurship of the euro area. Failure analysis provides us interesting information and motivation for understanding better entrepreneurial activity. This approach allows to develop new insights about emergent entrepreneurship.

## Disclosure statement

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