



## **An Analysis of the Macroeconomic Determinants of Entrepreneurial Activity in Turkey**

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### **ABSTRACT**

Today, entrepreneurship is seen as the main element of economic growth plays an important role in national economies in terms of contribution to employment innovation creation. In this sense, it is also important to determine the basic elements that affect entrepreneurial activities, to support the creation development of new businesses to decision makers for taking necessary measures. In this study, the effects of some macroeconomic factors on the dynamics of entrepreneurial activity in Turkey are investigated for a period of 11 years (2007–2017). The research includes access to credit (ACC), economic confidence index (ECI), inflation rate (INF), foreign direct investment (FDI), unemployment rate (UNEMP) industrial production index (IPI). The results of the research demonstrate that there is no correlation between access to credit, ECI unemployment rate entrepreneurship level; whereas inflation rate, FDI, IPI are related for the period covered in Turkey.

**Keywords:** Determinants of Entrepreneurship, Entrepreneurial Activities, Turkey

**JEL Classifications:** L25, L26, M13

### **1. INTRODUCTION**

The economic environment that is shaped by the concentration of economic financial crises experienced in recent years, and the decrease of economic growth, the increase of unemployment rate; increasing the interest of decision makers in determining the factors affecting the level of entrepreneurship. In this study, some entrepreneurs factors related to macroeconomic business environment are being investigated the effects on the dynamics of activities in Turkey for the period 2007–2017. The research was examined by regression model least square method. The results of scientific research show that factors such as access to credit, economic confidence index (ECI), inflation rate, foreign direct investment (FDI), gross domestic product (GDP) are the main macroeconomic factors determining entrepreneurship level.

The G20 Young Entrepreneurs Association (G20-YEA) promotes entrepreneurship in an economy, suggesting five key elements (Rusu and Roman, 2017. p. 2): Access to finance (facilitating entrepreneurs' access to finance, especially banks' development of innovative financing sources such as

crowdfunding- microfinance); culture of entrepreneurship (to risk failure, self-esteem, innovation research culture); tax legal regulations (tax incentives, ease of starting work, business-friendly legislation); education training (entrepreneurship training in pre-university and university education, entrepreneurship training, encouraging entrepreneurs to learn lifelong); co-ordinated support in all areas by specialized institutions such as government agencies, incubation centers, technology development centers, clusters, and business centers. According to the G20-YEA survey, access to finance is the area where entrepreneurs face the most difficulties. For this reason, improving access to finance is seen as the most supportive measure for the development of entrepreneurship.

The level of entrepreneurial activity may vary from one country to another sometimes in the same country; It is influenced by various factors such as economic, institutional, technological, cultural factors (Rusu and Roman, 2017. p. 2). In this context, the study aims to investigate the effects of some macroeconomic business environment related factors, taking into consideration the basic assumptions in the entrepreneurship literature.

Entrepreneurial activities enable policy makers analysts providing a better understanding the level of entrepreneurship the effects of entrepreneurship or the factors that affect its output (Ahmad and Seymour, 2008. p. 1). As it contributes to economic growth development, many countries are striving to keep the entrepreneurial activity alive or at a high level measured by the density of new company establishments closed companies.

## 2. LITERATURE REVIEW

While entrepreneurship is acknowledged by all for the development of national economies, there is no consensus on the elements that hinder entrepreneurship (Rusu and Roman, 2017. p. 2). Numerous theoretical empirical studies have been conducted in the literature to determine the factors that have a potential impact on entrepreneurial dynamics in terms of country or group of countries.

Wennekers et al. (2005) list technology, economic development level, demographic characteristics, cultural institutional factors as factors determining entrepreneurship level.

Giannetti and Simonov (2004), evaluate and emphasize the three factors comparatively that may influence entrepreneurial activity; individual characteristics (such as salary, welfare, age, some demographic characteristics); economic characteristics of the region in which the individual lives (income per capita, unemployment rate, etc.); the characteristics of the social environment (religion, social status of entrepreneurs, education, etc.).

Wennekers et al. (2005) emphasize that the dynamics of new entrepreneurial rates are influenced by the degree of economic development of countries institutional, demographic, and cultural factors in its study of 36 countries. It also shows that there is a U-shaped relationship between the rate of newly established entrepreneurship the level of economic development.

Grilo and Thurik (2004) examined the impact of social demographic factors on entrepreneurship on a sample of 15 European Union (EU) member states.

Klapper et al. (2006) finds that entrepreneurship is significantly related to the level of economic development (as measured by job entry intensity ratios), the quality of the legal regulatory environment, financial accessibility, and the size of the informal sector.

Santarelli and Vivarelli (2007) suggest that some of the formation of new firms may be determined by a number of factors, including prospective (profit expectations, family environment, previous work experience) and retrospective factors (low wages, fear of unemployment).

Shane (2008) expresses that many entrepreneurship is preferred in underdeveloped countries because of the lack of employment alternatives; whereas in strong economies, individuals voluntarily tend to be entrepreneurship. Because they find their own business more attractive than recruitment options.

Kim et al. (2010) use regression methods to investigate the dynamics of entrepreneurial activity in a group of OECD countries, including the 17 EU member states. The survey results show that governments contribute significantly to promoting entrepreneurship in economic matters and educational expenditures. The increase in public expenditure for promoting new entrepreneurs leads to an increase in entrepreneurial activity.

Bosma and Schutjens (2011) empirically examines the influence of regional conditions on entrepreneurial attitudes activities for 127 regions in 17 European countries for the period 2001–2006. The authors show that certain economic, institutional demographic factors have a significant effect on entrepreneurial attitude activity diversity.

Simón-Moya et al. (2014) analyze the economic institutional environmental conditions, the effectiveness of entrepreneurship, and the impact of countries' innovation performance on their work in 62 countries. The authors consider the sample countries in three groups according to the characteristics of the economic institutional environment. Entrepreneurial activity and innovation rates differ from one group to another. For this reason, it has been determined that the economic environment is significantly related to entrepreneurship level. In countries with a lower level of development, higher income inequality, higher levels of unemployment, entrepreneurial activity is significantly higher; On the other hand, in more developed countries, entrepreneurial activities are diminishing, entrepreneurship is less widespread, and innovation is developing considerably. Survey findings show that the best results in terms of opportunity for entrepreneurship innovation is recorded by a group of countries with high levels of economic freedom or strong formal institutions.

Sayed and Slimane (2014), which also include Turkey's 10 MENA countries, find that the most important factors affecting the entrepreneurial activity in a country as; an economic development level, population growth, working conditions, education level, financial development, macroeconomic stability, and technological development.

Arin et al. (2015) examine 32 macroeconomic indicators, indicating that the four most important factors affecting the level of entrepreneurial activity as; per capita GDP, unemployment, marginal tax rate, and inflation volatility. The research results show that entrepreneurship is related to inflation taxation, which are directly related to macroeconomic stability, in a meaningful systematic way. According to Arin et al. (2015), the total level of entrepreneurial activity is the result of human capital, level of economic development, and multiple interactions among institutions.

Dvoutely (2016), find a positive relationship about the unemployment rate and per capita GDP with the entrepreneurial activity in the Scandinavian countries for the period 2004–2014. The adverse effects of administrative barriers on entrepreneurial activity are also confirmed in the study. Nevertheless, no statistically significant empirical support has been obtained for the assumption of a positive relationship between the R&D sector in entrepreneurial activity.

Some studies show that the availability of financial access to capital can lead to an increase in the number of entrepreneurs and the development of entrepreneurship at the national or regional level (Black and Strahan, 2002; Hurst and Lusardi, 2004; Kim et al., 2006; Mueller, 2006; Werner, 2011; Sayed and Slimane, 2014, Rusu and Roman, 2017).

Rusu and Roman (2017) demonstrates that the influence of some macroeconomic, and individual institutional environmental related factors on the dynamics of entrepreneurial activities in their experimental work involving 18 EU Member States for the period 2002–2015. The results of the research reveal that inflation rate, direct foreign investments, access to financial resources, and the total tax rates are the main determinants in entrepreneurship level. It also finds that all the work-related factors considered in the analysis are a significant influence on the total entrepreneurial rate.

Various studies have been carried out to analyze the demographic characteristics of entrepreneurship activities in our country, focusing on the individual psychological characteristics, and analyzing socio-cultural factors (Bozkurt et al., 2012; Sönmez and Toksoy, 2014; Olcay and Kunday, 2016). However, one of the most comprehensive structured work on this subject is based on the global entrepreneurship monitor (GEM) model, conducted by the Turkish Economy Bank the Small and Medium Sized Enterprises Development Support Administration (KOSGEB). In this study (Karadeniz, 2014), the entrepreneurial activity in Turkey is discussed in detail for the regional level. The focus of the study is the demographic characteristics and individual psychological characteristics of entrepreneurs.

Özkan et al. (2003) analyze the effective use of resources, capacity utilization rate, the R&D, and employment rate as the determinants of entrepreneurship in Turkey. In this context, entrepreneurs are distinguished as the most developed Marmara region entrepreneurs and the less developed Eastern Anatolian region entrepreneurs for demonstrating regional imbalance.

Karadeniz and Özdemir (2009), attempts to explain the entrepreneurial activity by identifying entrepreneurship environment in Turkey, Turkish entrepreneurs' demographic characteristics, individual perceptions and motivations (perception, fear of failure, ability to take risks). One of the most important findings is that, compared to other developing countries to be much lower than that of early-stage entrepreneurial activity in Turkey, while the installation is relatively high number of entrepreneurial ventures. As the biggest problems in front of your entrepreneurship is shown as; the inadequacy of financial incentives, inadequacy of government programs to inform about technology, tax incentives, lack of intellectual property rights. Positive attitudes of people on entrepreneurship and openness of rapid change market are expressed as positive aspects.

Most of the studies as predictors of entrepreneurial activity in Turkey is discussed in terms of demographic factors or psychological factors. No studies have been done in terms of macroeconomic factors effects on entrepreneurship level. Macroeconomic factors in entrepreneurship are often the subject

of analyzes in the context of economic growth and development. In this study, the evaluation of macroeconomic factors is considered as a determinant of entrepreneurial activities. With in this context, it is aimed to contribute to the literature of entrepreneurship.

### 3. MEASUREMENT OF MACROECONOMIC FACTORS DETERMINING ENTREPRENEURIAL ACTIVITIES

The fact that the correct measurement of entrepreneurial activities is important in terms of ensuring that the right public policies to be pursued in this respect. The correct presentation of the situation serves as an early warning mechanism in the existing regulations for the removal of the obstacles in entrepreneurship. If a healthy measurement is not made, it will lead to inappropriate interventions and misleading entrepreneurial activities. This is particularly true for emerging economies with limited resources, which will result in unsuccessful policies, and in turn will increase the opportunity cost of an economy (Kukoc and Regan, 2008. p. 23).

There are three approaches to the creation of new businesses or factors that determine entrepreneurial activity (Sayed and Slimane, 2014. p. 63);

- i. The economic approach that takes into account the determinative macroeconomic factors in the creation of new businesses,
- ii. A psychological approach that focuses solely on the individual psychological characteristics of the person.
- iii. A corporate approach that takes into account socio-cultural factors that determine the individuals' decisions to become entrepreneurs.

The relationship between individual factors and entrepreneurial activities has also been the subject of research. Individuals' attitudes and attitudes towards entrepreneurship (perceived opportunities, level of belief in knowledge and skills, fear of failure) influence entrepreneurial activities. For example, as perceived opportunities increase, and the fear of failure decreases, suggesting that entrepreneurial activities are increasing. Factors related to business environment also affect entrepreneurial activities; it is suggested that the initial costs of establishing a new business, the length of the procedures applied, the time spent in the start-up are significant influences on entrepreneurship (Rusu and Roman, 2017. p. 13). Macroeconomic factors also influence the level of entrepreneurial activity. As you can see here, the subject is very broad. The aim of this study is to analyze macroeconomic factors in terms of being the determinant of entrepreneurial activities. Major macroeconomic factors subject to financial measurement in the literature are listed below and briefly explained.

TEA: The total entrepreneurial activity rate, generally accepted by the GEM, is used to measure the level of entrepreneurial activity. The TEA rate is expressed as a percentage of the age-old population (18–64 years) who can work as a newborn entrepreneur or a new owner for a shorter time period of 42 months. TEA contains new and young entrepreneurs has a great proposition for a country's economy. Because entrepreneurs involved in this stage

of entrepreneurial activity are expected to innovate as well as job creation. In addition, early-stage entrepreneurs add economies to dynamism and innovation (Rusu and Roman, 2017. p. 4).

**GDP:** Some research has shown that per capita GDP growth affects entrepreneurship positively (Sayed and Slimane, 2014; Dvouletý, 2016; Grilo and Thurik, 2017). Because the increase in income enhances the demand for goods and services, and the demand for entrepreneurial activities. Especially the establishment of new companies is also enhancing. Generally, positive relationship between per capita GDP growth and entrepreneurship is expected. In some other studies, the effect of per capita GDP on entrepreneurship is dependent on the economic development rate of the country (Shane, 2008; Arin et al., 2015). For this reason, the relationship between per capita and GDP entrepreneurship in poor countries is negative. Because low GDP levels cause individuals to set up their own businesses due to compelling factors such as the lack of employment alternatives. On the other hand, while labor markets in strong economies offer a more stable job opportunity, and they motivationally prefer to build their own business.

**Tax rate:** Entrepreneurial activity can also be affected by total tax rates (as a percentage of tax-commercial profits). The tax policy of an individual country has a great influence on one's decision to become an entrepreneur. Because low tax rates can make it more attractive to set up your own business when compared to paid work. Many research indicates that high tax rates lead to a decrease in the rate of self-employment (Bais et al., 1995; Klapper et al., 2006; Salman, 2014; Arin et al., 2015). Because, it is seen as an obstacle to start new business and decrease in business activities. Therefore, a negative relationship is expected between tax rates and entrepreneurial activity.

**Inflation rate:** Another important macroeconomic factor that is considered as a determinant of entrepreneurship is the inflation rate, which is not clearly related to entrepreneurship. According to some studies, an increase in job opportunities can be recorded if inflation increases (Vidal-Suñé and Lopez-Panisello, 2013; Sayed and Slimane, 2014). Because higher prices for products and services can cause entrepreneurs to increase earnings expectations. On the other hand, inflation can be a deterrent for entrepreneurship. As because of the business environment is considered as more risky, increasing the cost of establishing the business, increasing the population, the income inequality, and therefore lead to entrepreneurship reduction (Salman, 2014; Arin et al., 2015). High inflation rates, on the other hand, reduce firms' access to financial resources because of high borrowing costs, thus reducing the likelihood of entrepreneurship (Singh and De Noble, 2003). As a result, the relationship between inflation and entrepreneurship can be negative or positive. In this sense, there are two-sided evaluations in the financial literature.

**FDI:** Theoretical and empirical studies show that FDI (net inflows in % as of GDP) may have positive or negative effects on entrepreneurial activity. Meyer and Sinani (2009), and Albulescuab and Tămășilăa (2014) suggest that the effects of FDI on entrepreneurship have changed depending on the level of economic development of the countries. It is emphasized that

FDI affects entrepreneurship positively, that this depends on the level the development of a country, as well as on institutional support for entrepreneurship, political stability, and the quality of human capital.

As a positive effect of FDI, and the increase in commercial flows can also lead to the maintenance of export competitiveness, the stimulation of production competing with imports, at the same time managerial and managerial skills of entrepreneurs and foreign investors. On the other hand, some empirical studies also suggest that there is no negative or adverse effect of FDI on the entry of new domestic firms, especially in emerging economies (De Backer and Sleuwaegen, 2003; Onwuka and Chigozie, 2014). According to this opinion; foreign companies compete for the same customer volume and affect local firms. Negative results can occur. The presence of foreign firms in an industry can have an adverse effect on the entry of domestic firms by increasing technological entry barriers. Consequently, the literature suggests that FDI may or may not encourage local entrepreneurship. It is argued that, while foreign businesses bring in information and superior technology that the domestic economy can leap forward, and it can also increase competition in product factor markets, increase entrepreneurs' opportunity cost compared to employment. The direction of domestic entrepreneurship's response to FDI depends on which of these two influences are valid (Rusu and Roman, 2017. p. 6).

One of the reasons for the conflicting results in the financial literature is related to the fact that there is no distinction between entrepreneurial ones for compulsory reasons and entrepreneurial-oriented entrepreneurs for motivational reasons. Those who are entrepreneurs for compulsory reasons are those who are entrepreneurial to find no other options for work and to try to earn a living to live. Opportunity oriented entrepreneurs are those who want to be independent of their business or to start a business that demands to increase their income (Rusu and Roman, 2017. p. 6).

Albulescuab and Tămășilăa (2014) handles the impact of FDI in 16 European countries on entrepreneurial activity separately in terms of opportunity-oriented and challenging entrepreneurs. The introvert FDI has a positive effect on opportunistic entrepreneurs, indicating that outward FDI has a positive effect on entrepreneurs based on the necessity and a negative effect on the other category. Opportunistic entrepreneurship is related to more sophisticated, innovation-oriented economies, while entrepreneurialism for coercive reasons characterizes productivity-focused European economies.

Pathaka et al. (2014) show that FDI has negative correlations with five entrepreneurial types (newborn, new, early stage, established, and high growth-according to GEM definition) in its study of 38 European countries.

Eren et al. (2016), found that FDI did not have an impact on entrepreneurial activity at the level of individual ownership in the US for the period 1996–2008.

**Access to credits:** The the most widely accepted World Bank definition and indication of access to the financial services in the

literature is (TCMB, 2011. p. 12): “Financial access is the lack of price barriers in the use of financial services. The criterion of financial access is the proportion of the total population of adults with any account in a bank or a legal financial institution (check, savings, insurance, investment, credit, etc.)” One of the biggest problem, especially for small and new enterprises, is the ease of access to the loans. The most significant source of external financing for businesses is the bank loans. Access to credit is measured as a share of GDP by local loans given by private sector banks. It is suggested that accessibility to credit will encourage new business initiatives and increase the growth of existing businesses (Sayed and Slimane, 2014; Arin et al., 2015). On the other hand, some studies have found a negative relationship between access to finance and entrepreneurship. This means that access to finance for many early stage businesses is not a problem (Hurst and Lusardi, 2004; Mueller, 2006). Because most firms do not need large amounts of financial capital. Therefore, new ventures will continue to enter the market even in the event of an economic collapse or financial crisis, and even if access to bank loans is diminishing.

Unemployment rate: Another macroeconomic variable that can affect entrepreneurial activity is the unemployment rate (in% of total workforce). Santarelli and Vivarelli (2007) reveals that job loss is an important factor determining the formation of a new firm at regional level and that entrepreneurship is seen as an avoid from unemployment, since building a new business can be an alternative to future uncertain career prospects. Especially during the economic crisis, unemployment plays an important role in some countries (Santarelli and Vivarelli, 2007; Dvouletý, 2016; Sayed and Slimane). However, the relationship between unemployment rate and entrepreneurship is uncertain (Grilo and Thurik, 2004; Vidal-Suñé and Lopez-Panisello, 2013; Sayed and Slimane, 2014; Arin et al., 2015). On the other hand, a significant increase in the unemployment rate could lead to a decrease in demand for goods and services that would reduce job opportunities. However, rising unemployment can cause more people to choose to work on their own due to compulsory reasons (Rusu and Roman, 2017. p. 7).

Population growth: Population growth according to some researches has positive effect on long term over entrepreneurship level. In countries with rapid population labor force growth, the share of self-employed individuals increases while the share of entrepreneurs in countries that slow down in the rate of population growth decreases (Bais et al., 1995; Sayed and Slimane, 2014). Reynolds et al. (1999) argue that higher population growth has increased expectations for future demand and improved perceptions of business opportunities.

#### 4. DATA SET AND METHOD

The aim of this study by testing the relationship between total entrepreneurial activity with a number of macroeconomic indicators, is to demonstrate the potential determinant of entrepreneurial activity in terms of economic elements in Turkey. The sample includes 11 years of monthly data covering the period for 2007–2017 and a total of 6 macroeconomic indicators are used in the survey.

- TEA: As a total entrepreneurial activity, the monthly number of new ventures was used. (2007–2009 period interval 3 years data are taken from TUIK, TOBB records in and after 2010. Responsibility for keeping records related to this in 2010 and later has been transferred to TOBB).
- IPI: Industrial production index (IPI) (TUIK data is used). Industrial production, expressed in terms of an index formed by weighting all of the industry types according to production classes, has a significant share in GNP.
- INFL: Inflation rate (consumer prices-TUIK data are used).
- FDI: FDI net total of US\$ denominated data is obtained from the Turkish Ministry of Economy official site).
- UNEMPL: Unemployment rate (TUIK data is used).
- ACC: Credit Access (Loans granted to small businesses/Total lending rate-BDDK data is used).
- ECI: ECI (TUIK data is used). ECI, published monthly by TUIK defined as the “composite index that reflect consumers and producers assessment about the general economic situation which summarizes expectations and trends.”

Time series analysis is applied to obtain the estimated coefficients of the regression models. The smallest squares method is used to correct the fluctuation effect of the time series. It is possible to talk about the consistency of the work done if the time series data is stationary. Regression analysis can not be performed on nonstationary time series. Static stationary levels have been tested with the Dickey Fuller test (ADF test) the Philips-Perron (PP test) unit root test. The following regression model was used in the analysis:

$$TEA_t = a + b_1 ipi_t + b_2 infl_t + b_3 fdi_t + b_4 unempl_t + b_5 acc_t + b_6 eci_t + \varepsilon_t$$

The results of the experimental analysis are given in the following section.

#### 5. FINDINGS

The study includes 11 years of monthly data covering the period 2007–2017. A total of 6 macroeconomic indicators are used in the study. The summary statistical results of the study are given in Table 1. In the first part of the table, the summary statistical results are given in terms of raw data for the variables and in the second part for the difference of the series.

Whether the significancy of each individual variable in the model is tested with the Wald statistic (Table 2).

The null hypothesis is rejected because the calculated value of F is greater than the critical value of F (5% confidence interval). This means that the independent variables used in the model are significant.

After the time charts of the series have been evaluated, logarithms of the series have been taken in order to purify and linearize the series from small fluctuations. The ADF unit root test results of the variables used in the analysis are given in Table 3. Another method used to test whether the board is stationary is the PP test. The null and alternative hypotheses of the PP test also overlap with the ADF unit root test. PP unit root test results are given in Table 4.

**Table 1: Descriptive statistics**

Variable	TEA	ACC	ECI	INF	FDI	IPI	UNEMP
Mean	4607.237	0.317237	99.87645	212.9620	1181.405	111.5324	10.71189
Median	4467.000	0.321000	100.7010	205.4300	934.0000	111.7470	10.29210
Maximum	7117.000	0.381000	116.1190	325.1800	6426.000	146.2910	15.00350
Minimum	2393.000	0.255000	62.00190	135.8400	-282.0000	72.88930	8.800000
SD	1041.037	0.036617	9.707452	52.32548	821.9758	15.06669	1.433180
Skewness	0.288062	-0.105120	-1.509668	0.366107	2.556637	-0.131329	1.197769
Kurtosis	2.559629	1.760484	6.553074	2.024834	14.52542	2.468329	3.788881
Jarque-Bera	2.870236	8.627442	118.6681	8.117012	867.7708	1.919494	34.72011
P	0.238087	0.013384	0.000000	0.017275	0.000000	0.382990	0.000000
Observations	131	131	131	131	131	131	131

  

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**Table 2: Wald test**

Test statistic	Value	Serbestlik derecesi	P
F-statistics	3.075718	(2, 123)	0.0497
Chi-square	6.151437	2	0.0462
Null hypothesis: C (1)=0, C (2)=1			
Null hypothesis summary			
Normalized restriction (=0)	Value	SE	
C (1)	-0.019774	0.010706	
-1+C (2)	-0.783790	0.411995	

The results of the regression analysis in terms of macroeconomic determinants are given in Table 5. As you can see from the table; inflation rate, FDI, and IPI are among the macroeconomic indicators associated with total entrepreneurial activity. There is a negative relationship between FDI and entrepreneurship. The increase in the IPI as a measure of income generation also increases the total entrepreneurial activity positively. There was no relationship between total entrepreneurial activity in terms of access to credit, ECI, and unemployment rate (UNEMP).

In the scientific researches, as mentioned in the previous section, inflation has a negative effect on entrepreneurship. Inflation and entrepreneurship activities are negatively related. In other words, the increase in the inflation affects the entrepreneurial activities negatively. Because inflation (Rusu and Roman, 2017. p. 11); increases the cost of starting a business, reduces firms' access to capital, and increases inequality in income distribution in the society. Obtained findings do not overlap with the literature in this sense.

The increase in the ECI in terms of increasing or facilitating access of the entrepreneurs to the loans and the indicator of the confidence in the economy affects the total entrepreneurial activity positively. The relationship between unemployment rate and

entrepreneurship in the literature is uncertain. In some studies, the increase in the unemployment rate indicates that entrepreneurship has increased because of compelling reasons. In this study, unlike general expectations, no relation was found in terms of access to lending, ECI, and unemployment rate.

As mentioned before, FDI is a controversial issue in the literature. In this sense there are different conclusions. In some studies, FDI negatively affects entrepreneurial activities, whereas in some studies it contributes. In this study, total entrepreneurial activity is negatively related to FDI. FDI and entrepreneurship (TEA) are statistically significant at 1% level.

## 6. CONCLUSION

There is a strong demand for countries to understand the levels of entrepreneurship in general and the factors that affect them. The determinants of entrepreneurial activity vary widely. As mentioned in the previous section, there are three general approaches to the determinants of entrepreneurial activity; economic approach taking into account macroeconomic factors, psychological approach focusing on individual psychological characteristics of persons, and socio-cultural factors. With in this context, the issue is quite extensive.

In this study, the effects of six main macroeconomic factors on entrepreneurial activity dynamics are investigated for the 2007–2017 period in Turkey. Analysis results demonstrate that access to credit, ECI, and unemployment rate are not related to and it does not affect the entrepreneurial activities.

It is understood that the inflation rate, FDI, and IPI are among the macroeconomic indicators related to total entrepreneurial activity. A country's economic development, positive macroeconomic indicators, strong institutional environment influence the entrepreneurial activities of the country positively. In this context,

**Table 3: ADF unit root test results**

Variables	ADF test	Test critical values			Olasılık
		%1	%5	%10	
LNACC	-2.071430	-3.481623	-2.883930	-2.578788	0.2566
LNACC	-3.424496	-4.034997	-3.447072	-3.148578	0.0529
LNACC	-4.164984	-3.485586	-2.885654	-2.579708	0.0011
LNACC	-7.246767	-4.034997	-3.447072	-3.148578	0.0000
LNECI	-2.998049	-3.481623	-2.883930	-2.578788	0.0377
LNECI	-2.982278	-4.030729	-3.445030	-3.147382	0.1413
LNECI	-8.278450	-3.481623	-2.883930	-2.578788	0.0000
LNECI	-8.245910	-4.030729	-3.445030	-3.147382	0.0000
LNINF	0.931042	-3.486551	-2.886074	-2.579931	0.9956
LNINF	-2.075704	-4.037668	-3.448348	-3.149326	0.5536
LNINF	-3.017706	-3.486551	-2.886074	-2.579931	0.0361
LNINF	-3.109828	-4.037668	-3.448348	-3.149326	0.1089
LNFDI	-11.00344	-3.481217	-2.883753	-2.578694	0.0000
LNFDI	-11.14605	-4.030157	-3.444756	-3.147221	0.0000
LNFDI	-6.003030	-3.486064	-2.885863	-2.579818	0.0000
LNFDI	-6.006888	-4.036983	-3.448021	-3.149135	0.0000
LNIFI	-0.397341	-3.486551	-2.886074	-2.579931	0.9049
LNIFI	-2.668918	-4.037668	-3.448348	-3.149326	0.2515
LNIFI	-2.627312	-3.487046	-2.886290	-2.580046	0.0904
LNIFI	-2.674509	-4.038365	-3.448681	-3.149521	0.2491
LNUNEMP	-1.992411	-3.481217	-2.883753	-2.578694	0.2899
LNUNEMP	-2.097458	-4.030157	-3.444756	-3.147221	0.5420
LNUNEMP	-1.969789	-3.487046	-2.886290	-2.580046	0.2998
LNUNEMP	-1.956702	-4.038365	-3.448681	-3.149521	0.6183
LNTEA	-1.289005	-3.486551	-2.886074	-2.579931	0.6331
LNTEA	-2.744515	-4.037668	-3.448348	-3.149326	0.2211
LNTEA	-2.382939	-3.487046	-2.886290	-2.580046	0.1488
LNTEA	-2.619896	-4.038365	-3.448681	-3.149521	0.2725

**Table 4: Unit root test results**

Variables	PP test	Test critical values			Olasılık
		1%	5%	10%	
LNACC	-2.143562	-3.481217	-2.883753	-2.578694	0.2282
LNACC	-2.635395	-4.030157	-3.444756	-3.147221	0.2656
LNACC	-14.75235	-3.481623	-2.883930	-2.578788	0.0000
LNACC	-14.94136	-4.030729	-3.445030	-3.147382	0.0000
LNECI	-2.680486	-3.481217	-2.883753	-2.578694	0.0802
LNECI	-2.660256	-4.030157	-3.444756	-3.147221	0.2549
LNECI	-8.299981	-3.481623	-2.883930	-2.578788	0.0000
LNECI	-8.268094	-4.030729	-3.445030	-3.147382	0.0000
LNINF	1.166971	-3.481217	-2.883753	-2.578694	0.9979
LNINF	-2.809300	-4.030157	-3.444756	-3.147221	0.1967
LNINF	-10.99530	-3.481623	-2.883930	-2.578788	0.0000
LNINF	-11.80426	-4.030729	-3.445030	-3.147382	0.0000
LNFDI	-11.00700	-3.481217	-2.883753	-2.578694	0.0000
LNFDI	-11.14474	-4.030157	-3.444756	-3.147221	0.0000
LNFDI	-64.22679	-3.481623	-2.883930	-2.578788	0.0001
LNFDI	-63.42098	-4.030729	-3.445030	-3.147382	0.0001
LNIFI	-3.139981	-3.481217	-2.883753	-2.578694	0.0261
LNIFI	-7.340489	-4.030157	-3.444756	-3.147221	0.0000
LNIFI	-47.08049	-3.481623	-2.883930	-2.578788	0.0001
LNIFI	-46.45564	-4.030729	-3.445030	-3.147382	0.0001
LNUNEMP	-2.094988	-3.481217	-2.883753	-2.578694	0.2471
LNUNEMP	-2.200389	-4.030157	-3.444756	-3.147221	0.4850
LNUNEMP	-11.03831	-3.481623	-2.883930	-2.578788	0.0000
LNUNEMP	-10.99737	-4.030729	-3.445030	-3.147382	0.0000
LNTEA	-4.264043	-3.481217	-2.883753	-2.578694	0.0008
LNTEA	-5.221953	-4.030157	-3.444756	-3.147221	0.0002
LNTEA	-19.99981	-3.481623	-2.883930	-2.578788	0.0000
LNTEA	-20.12978	-4.030729	-3.445030	-3.147382	0.0000

**Table 5: Macroeconomic determinants**

Dependent variable: TEA				
Method: Least squares				
Variable	Coefficient	SE	t-statistics	P
Constant	-0.019774	0.010706	-1.847057	0.0671
D (LNACC)	0.216210	0.411995	0.524788	0.6007
D (ECI)	0.000872	0.003907	0.223175	0.8238
D (LNINF)	2.680683	1.536805	1.744322	0.0836*
D (LNFDI)	-0.013467	0.004198	-3.208077	0.0017***
D (LNSUE)	0.978306	0.207447	4.715929	0.0000***
D (LNUNEMP)	0.338121	0.278928	1.212218	0.2278
R <sup>2</sup>	0.248015			
Adjusted R <sup>2</sup>	0.211333			
F statistics	6.761188			
P (F-st)	0.000003			
Wald F statistics	8.765056			
P (Wald F-st)	0.000000			

\*, \*\*, and \*\*\* denotes that coefficients are significantly at 10%, 5%, and 1% level

it is extremely important for governments to create and implement policies that provide an economic environment that fosters entrepreneurship as the main source of economic growth.

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