

Regional integration and entrepreneurship: evidence from European Union

Regional
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entrepreneurship

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Abstract

Purpose – The purpose of this paper is to empirically uncover the relationship between economic integration and levels of entrepreneurial activity across 24 EU countries between 2004 and 2012. The deepening of EU integration corresponds to increases in the size and competitiveness of domestic markets as member states reorient economic activity toward the larger, competitive single market. Spillovers of both economic and political dimensions of integration in the common market on micro firm and self-employment are considered. The paper contributes to the understanding of the hypothesized relationship between globalization and the rise of entrepreneurial economy.

Design/methodology/approach – The paper uses fixed effects linear regression models to estimate the marginal effects of economic integration on entrepreneurial activity. Several dependent variables and controls for social, economics, and institutional context are used to confirm the robustness of the results.

Findings – The paper finds that increased economic activity of member countries within the EU common market, as well as institutional compliance and integration in the European Monetary Union and Schengen Agreement are positively and significantly associated with the rise of entrepreneurship. Notably, it is found that a standard deviation increase in economic and political integration is associated with, respectively, 16 and 7.2 percent increase in micro firm density. Some preliminary evidence on the quality of the arising entrepreneurial activity are also given.

Originality/value – The paper takes stock of existing descriptive and theoretical literature on global economic integration and entrepreneurship to uncover, for the first time, the empirical relationship between entrepreneurship and levels of economic and political integration within the EU bloc.

Keywords European Union, Entrepreneurship, Economic integration, Political integration

Paper type Research paper

1. Introduction

Recent years have witnessed a surge in scholarly debates on the causes and consequences of EU integration. The narrative strand of this literature focuses on the past and future of EU's federalism, as well as political economy of European integration (e.g. Spolaore, 2015; Wyplosz, 2015; Börzel and Hosli, 2003). Empirical studies on the topic emerged more recently with the availability of quantifiable data on the scope and depth of European integration. This burgeoning literature has investigated a wide range of effects of EU membership, from economic growth and convergence to inequality and institutional reform (see e.g. König, 2015; Mann, 2015; Campos *et al.*, 2014; Crespo Cuaresma *et al.*, 2008; Kutun and Yigit, 2007; Badinger, 2005; Busemeyer and Tober, 2015; Ugur, 2013; Hall *et al.*, 2011). This paper contributes to this body of work by testing the linkage between EU integration and entrepreneurial activity in 24 EU member countries in the 2004-2012 period.

Following Klapper *et al.* (2010), entrepreneurship is defined as “the activities of an individual or a group aimed at initiating economic activities in the formal sector under a legal form of business” (p. 131). To gauge entrepreneurial activity across countries and over time in a consistent manner and as broadly as possible, I use three different measures of micro firm (one to nine employees) formation, as well as the rate of self-employment in the empirical analysis. Taken together, these variables represent an important barometer of overall levels of entrepreneurship, which has been recognized as essential for continued dynamism, competition, and innovation within an economy (Klapper *et al.*, 2006, 2010).



In that regard, and perhaps unsurprisingly, promotion of entrepreneurship has become one of the foremost policy goals across the world and in the EU itself.

Established at the Treaty of Rome in 1957 as a tariff-free zone, the EU today resembles a loose federation whose *de jure* sovereign member states share common foreign, trade, monetary, and certain domestic policies. Citizens of EU countries are free to cross national borders and work anywhere within the territory of the union without facing discrimination. Goods, services, and capital flow freely throughout the EU's Single Market. Member countries benefit from structural and cohesion funds paid into the common EU Budget. The European Parliament sets EU-wide legislation while the European Court of Justice (ECJ) adjudicates conflicts and ensures members' compliance with EU regulation.

Despite EU's prominence in promoting peace and prosperity among its members, there have been few attempts to quantify the actual extent of integration within EU and similar blocs. In this study, I use the recently developed EU Index (König and Ohr, 2013) that measures the extent of economic activity and institutional compliance of each member country with the EU's common market. Higher values of the integration indices imply greater economic and institutional proximity with the common market relative to and at the expense of the rest of the world. The reorientation of member countries' economies toward the common market effectively expands the size of the domestic market, facilitates access to labor, capital, and new technologies, and promotes economic growth in member countries (König, 2015).

Did deepening of intra-EU economic activity affect entrepreneurship in member states? The question appears salient, as entrepreneurial activity may act as one conduit through which EU integration increases living standards in member states. On the one hand, deeper EU integration entails greater competition and macroeconomic volatility that pressure entrepreneurs to increase efficiency or risk bankruptcy. Along a similar vein, Melitz (2003) formally models a dynamic industry with heterogeneous firms, concluding that opening up to trade forces low productivity firms to exit. On the other hand, a positive and significant association between EU integration and entrepreneurship would be indicative of positive externalities as well as expanded opportunities for specialization for entrepreneurial individuals stemming from EU membership.

Evidence from reduced form regressions indicates that entrepreneurship, proxied by micro-firm density and self-employment rates, increases in the levels of EU economic and political dimensions of common market integration. This finding suggests that entrepreneurial learning and opportunities arise as member states become more economically and institutionally integrated with the EU, resulting in faster start-up formation and higher rates of self-employment and business ownership. Existing literature points to potential "pull" (opportunity) factor of integration that influence entrepreneurial individuals to make the occupational choice to self-employment. In that respect, this paper provides some preliminary evidence that encouraging entrepreneurship through deepened integration with the EU common market can be an important conduit for promoting employment and economic growth within countries.

The remainder of the paper proceeds as follows. Section 2 reviews the role of entrepreneurship in economic development, its relevance to the EU, and subsequently discusses the hypothesized linkages between economic integration across countries and the rise of the entrepreneurial economy. Section 3 describes data and methodology, and Section 4 presents empirical results. Section 5 offers some concluding remarks.

2. Background and literature review

2.1 *Entrepreneurship in the European Union*

Entrepreneurship is widely recognized as a key ingredient of economic progress (e.g. Audretsch, Carree, Van Stel and Thurik, 2002; Audretsch, Thurik, Verheul and Wennekers, 2002).

In a Schumpeterian sense (Schumpeter, 1942), entrepreneurs take risks and innovate whereby they creatively destroy incumbent technologies and products. Aghion and Howitt (1992) formally model the process of creative destruction (vertical innovation) as the underlying source of economic growth. A related perspective put forth by Kirzner (1973, 1997) describes entrepreneurs as alertness agents operating in a disequilibrium environment who discover, by trial and error, previously unknown arbitrage opportunities. These theories argue that the positive linkage between entrepreneurship and economic development stems from the discoveries of optimal product-market combinations, creation of knowledge spillovers, reduction of production costs, stimulation of productivity, and competition.

Despite many theoretical and descriptive treatments on the effects of entrepreneurship, consistent empirical evidence has been lacking, in part due to difficulties in finding a commonly accepted definition of entrepreneurship across countries (van Stel *et al.*, 2005; Wong *et al.*, 2005). More recently, however, a number of empirical studies have documented a positive impact of several different dimensions of entrepreneurial activity on productivity, income levels, and economic growth in a cross-country setting (see e.g. Erken *et al.*, 2016; Carree *et al.*, 2007; Wong *et al.*, 2005; Audretsch and Thurik, 2003; for US state or county-level analyses, see Wiseman and Young, 2013; Goetz *et al.*, 2012; Sobel, 2008). The consensus on the matter has slowly shifted toward the idea that the relationship between entrepreneurship and development is bidirectional and U-shaped; whereas richer countries experience overall higher entrepreneurship levels (Eeckhout and Jovanovic, 2012; Wennekers *et al.*, 2005), the positive effect of entrepreneurship on development is the greatest at higher levels of development (Valliere and Peterson, 2009; van Stel *et al.*, 2005).

Against this backdrop, the EU stands out as a particularly interesting case in that it is a bloc of independent yet highly integrated countries enjoying relatively high levels of development (21 of 24 observed countries are OECD members as of 2012) and a sound institutional environment – factors suggestive of the prevalence of the more “productive” and innovation-driven type of entrepreneurship (Ács, 2010; Sobel, 2008; Baumol, 1990). Indeed, the importance of entrepreneurship as a motor for development has been recognized by the European Commission (EC), which cites promotion of small- and medium-size enterprises (SMEs) as one of its policy goals (European Commission website, https://ec.europa.eu/growth/smes/promoting-entrepreneurship/index_en.htm). According to the EC, the SMEs comprise 99 percent of all businesses and account for 85 percent of new jobs in the EU, while as many as 37 percent of EU citizens exhibit preference for self-employment (European Commission website, <http://ec.europa.eu/growth/smes/>).

At the micro-level, several empirical studies have used cross-sectional survey data to explore demographic and cultural determinants of entrepreneurial engagement levels, latent entrepreneurship rates, and reported self-employment levels for EU citizens (Grilo and Thurik, 2005a, b, 2006, 2008; Grilo and Irigoyen, 2006; Verheul *et al.*, 2006). These studies generally highlight the perception of administrative complexities as the main obstacle to starting a business. Freytag and Thurik (2007) study similar response variables at the national level for 26 EU countries. They find that actual entrepreneurship levels cannot be adequately explained with given data, but that latent entrepreneurship decreases in countries’ regulatory burden, life expectancy, and socialist heritage. However, their analysis is also cross-sectional and only concerns the year 2004.

Following Klapper *et al.* (2010), this paper considers entrepreneurial activities as primarily embedded within a legal form of a business. This assumption allows for using more standardized units of observation across countries. In that respect, micro firms (one to nine employees in size) are chosen as the unit of analysis and the principal conduit for entrepreneurs, as they have been found to capture the typical initial size of new business ventures in several relevant countries (Rocha *et al.*, 2016; Melillo *et al.*, 2013; Gottschalk *et al.*, 2009)[1]. The formation of micro firms is thus indicative of higher

entrepreneurial activity within countries, as they are primarily inwardly oriented, and come about as a result of either self-employment (sole proprietorship), or joint venture (partnership) between few entrepreneurial individuals.

2.2 Economic integration and the entrepreneurial economy

The economics profession has only recently begun to unbundle the relationship behind international economic integration and entrepreneurship (Koster and Karlsson, 2009). Yet, observed trends since the 1970s attest to the accelerated pace of integration – expressed through increases in trans-national trade, capital, and labor flows – with a simultaneous resurgence of entrepreneurship around the world (Verheul *et al.*, 2001). The industrial restructuring from managed toward an entrepreneurial model of production has been even more pronounced among the developed countries (Eeckhout and Jovanovic, 2012; Audretsch and Sanders, 2008).

Has economic integration (or, alternatively, globalization) induced the rise of the entrepreneurial economy? Theoretical literature has explored this question by modeling globalization as a shock to unskilled labor supply, political risks associated with foreign direct investments, and technology (particularly ICT) diffusion (Audretsch and Sanders, 2008). The basic idea is that globalization induces a shift in comparative advantage in developed countries toward production of goods in the early stage of product cycle. In that respect, entrepreneurs – the primary movers of goods varieties between life cycle stages – play an important role in realizing new profit opportunities. However, according to the Eclectic Theory of Entrepreneurship, the impact of globalization can be both positive and negative (Verheul *et al.*, 2001). On the one hand, increased competition from international markets may negatively affect small firms, by either crowding them out or creating better employee rather than self-employment opportunities. On the other, smaller firms may be better able to absorb macroeconomic variabilities and adapt to macroeconomic changes in a globalized economy.

More recently, a number of studies attempted to describe the underlying mechanisms behind the integration-entrepreneurship linkage (Vinig and de Kluijver, 2008; Koster and Karlsson, 2009; Audretsch and Thurik, 2004). The main factors are identified as stemming from capital availability, productivity and product knowledge spillovers, corporate reorganization, and cross-border movements of people. As countries open up to product and factor flows, new technologies, managerial practices, and know-how become more easily transferrable across countries. Greater availability of capital also lowers its cost and provides much needed venture funds necessary for the undertaking of entrepreneurial activity[2]. Entrepreneurs gain and capitalize on product knowledge by imitating or complementing imported products. Greater human mobility in general contributes to knowledge spillovers but also to increases in demand for variety (Verheul *et al.*, 2001). Higher market volatility and shifts in potential demand due to globalization may also create business opportunities that small firms are better able to exploit and adapt.

Another important “symptom” of economic integration manifests through the presence of multi-national enterprises (MNEs). Large MNEs not only introduce new technologies to host countries but also play a role in encouraging domestic entrepreneurship by providing imitation role models as well as productivity and knowledge spillovers. In an illustrative example, McKeon *et al.* (2004) provide qualitative evidence that MNEs act as incubators for budding entrepreneurs in the Irish IT sector. Indeed, there exists a well-documented history of people learning from employment at large corporations and subsequently leaving them to form their own start-ups (e.g. Steven Jobs of Apple and Chester Carlsson of Xerox) (Audretsch and Thurik, 2004). Moreover, recent trends in corporate downsizing due to outsourcing and offshoring provided opportunities for entrepreneurs to subcontract and act as local suppliers of non-core services for the MNEs (e.g. security, delivery, catering, cleaning, tailoring, etc.).

In spite of these hypothesized channels, evidence in this arena has been lacking[3]. A preliminary empirical exercise by Vinig and de Kluijver (2008) found no support that globalization, measured by the KOF index (Dreher, 2006), positively affects the rate of nascent and actual entrepreneurship in a sample of 30 countries[4]. Eeckhout and Jovanovic (2012) examine the issue from an alternative angle, by asking how openness and international labor market integration relate to occupational choice. In a formal model, they posit that in high skilled (developed) economies, a disproportionate share of people switches to managerial positions after integration. Using similar data as Vinig and de Kluijver (2008), they find evidence that globalization and openness encouraged entrepreneurial activity, especially in richer countries.

In tandem with globalization, the European countries underwent the process of regional integration. In this context, regional integration is typically considered as more “intense” than globalization in that it involves similar underlying forces but operating between geographically proximate and often culturally similar countries. From its beginnings as a free trade area, the EU had evolved to a customs union, single market, and ultimately a monetary union by the end of the twentieth century. The EU expanded from the six initial members in 1957 (France, West Germany, the Netherlands, Belgium, Luxembourg and Italy) to currently 28 states encompassing over 500 million people and over a fifth of global gross domestic product.

Empirical examinations of the impact of EU membership and integration on living standards gained more traction in recent literature. Notably, Campos *et al.* (2014) use synthetic counterfactuals method to find that enlargement countries would have suffered per capita income penalty of 12 percent on average had they not joined the EU. Badinger (2005) finds per capita income penalty of 20 percent for the EU as a whole had integration not taken place. Several related studies report a positive effect of EU membership on growth and convergence (König, 2015; Mann, 2015; Crespo Cuaresma *et al.*, 2008; Kutan and Yigit, 2007)[5].

Apart from increases in intra-EU trade and factor flows, membership in the EU also entails an important political dimension. Upon joining, countries become a part of a political structure resembling market-preserving federalism (Weingast, 1995). This type of federalism is characterized by an existence of multiple layers of government maintaining separate scopes of authority, with sub-federal authorities maintaining primary regulatory control over own economies. In this case, the sub-federal jurisdictions – EU member states – co-exist within a common market in which they are unable to impose new trade or capital barriers on other members, or have access to unlimited credit. The presence of the internal market of unrestricted mobility ensures competition for economic activity among sub-federal jurisdictions (e.g. Tiebout, 1956). Accordingly, further institutionalization of the common market through continued facilitation of cross-border labor movements, adoption of the common currency, and enforcement of members’ compliance with common market regulations is indicative of increased re-orientation of home economies toward the largest competitive market in the world. The process of joint institutions building in the EU has been linked with long-run trade deepening between EU member countries (Agur *et al.*, 2007).

Have these two mechanisms of EU integration – increases in the effective size and competitiveness of the home market – influenced the rise of entrepreneurial economy in EU member countries? The measure of EU integration used in this paper is the EU Index (König and Ohr, 2013), which captures the extent of economic dependence and institutional proximity to the EU’s Single Market[6]. In a Smithian vein, such market expansion creates new opportunities for specialization that entrepreneurial individuals can exploit. The channels described above are tested in an unbalanced panel framework during the 2004-2012 period. In largest regression subsamples, micro firms comprise between 69 and 97 percent of total businesses (average of around 90 percent) while the rate of

self-employment ranges from 6 to nearly 37 percent (average 16 percent). Understanding the impact on entrepreneurship can expand existing understanding of economic consequences of EU integration on income growth and unemployment in member countries.

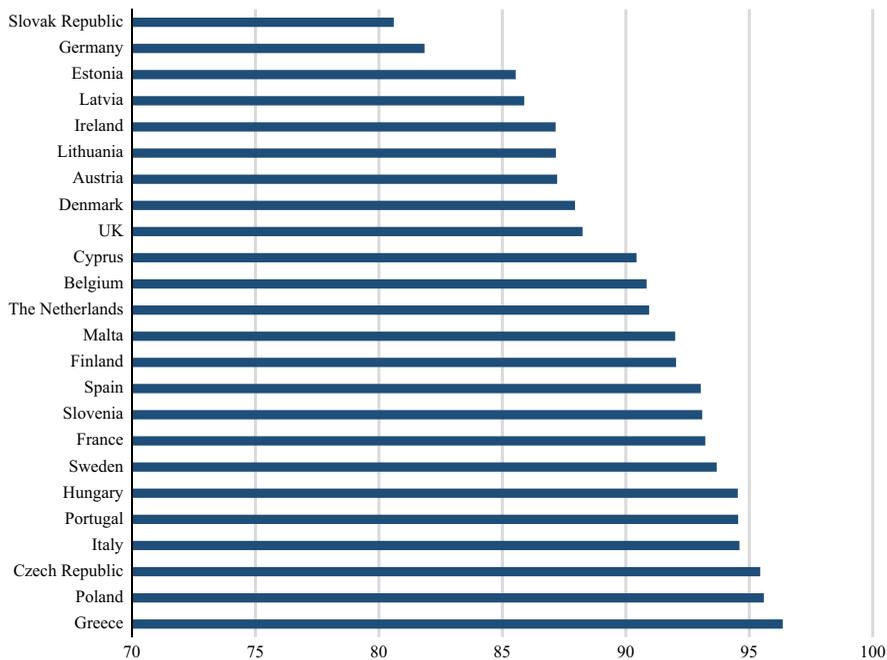
3. Data and methodology

The primary measure for entrepreneurial activity is the size of the private startup sector scaled by the size of the labor force (i.e. firm density). As most common initial startup size among European countries is a firm with fewer than ten employees, increases in entrepreneurial activity on the margin and over the shorter-run may be observed through comparative prevalence of micro-firm enterprises. Data on micro firms are obtained from OECD Structural and Demographic Business Statistics databases. In general, OECD defines an enterprise as “a legal entity possessing the right to conduct business on its own; for example, to enter into contracts, own property, incur liabilities for debts, and establish bank accounts. It may consist of one or more local units or establishments corresponding to production units situated in a geographically separate place and in which one or more persons work for the enterprise to which they belong.”

For robustness, three alternative measures are considered as dependent variables: the net entry of micro firms per labor (new net micro firm density), the share of micro firms in the number of total firms in the economy, and self-employment rate. The World Bank defines self-employed workers as “those workers who, working on their own account or with one or a few partners or in cooperative, hold the type of jobs defined as a ‘self-employment jobs,’ i.e. jobs where the remuneration is directly dependent upon the profits derived from the goods and services produced.” In that respect, self-employment and micro firm prevalence exhibit considerable overlap, since a considerable fraction of the self-employed are business owners by choice, and their effect on generating future employment and growth has been recognized in recent studies (Erken *et al.*, 2016; Thurik *et al.*, 2008; Carree *et al.*, 2007)[7].

Countries observed in the empirical analysis include all EU countries that joined by 2004 (excluding Luxembourg): Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the UK. Three most recent EU members, Bulgaria (2007), Romania (2007), and Croatia (2013) are likewise excluded as these countries are not observed in the EU Index data set. In-sample data show that EU countries exhibited significant structural change over time toward a more entrepreneurial economy. Results from unreported regressions suggest that, on average, the number of micro firms per labor has been increasing at a pace of 4 percentage points per year, and the share of micro firms in the economy by 0.5 percent between 2004 and 2012. Figure 1 shows the average share of micro firms in total number of firms for 24 EU countries between 2004 and 2012. During this period, Greece had the highest average share (96.4 percent), while Slovakia had the lowest (80.6 percent).

The integration variables of interest are the two components of the EU index developed by König and Ohr (2013)[8]. The two used indices, single market and institutional conformity index, measure the depth of economic and political integration with the EU Single Market annually for each member country. The single market index (SMKT) captures the extent of economic reliance of a member country to the EU Single Market. It combines four indicators of intra-EU economic integration in terms of goods trade, services trade, capital movements, and (EU) labor migration[9]. The political integration index (POL) captures conformity with the regulations of the common market as well as adoption of institutional mechanisms that lower transaction costs and barriers to labor movement across EU: Monetary Union membership (euro adoption and participation in exchange rate mechanism), Schengen participation (removal of border checkpoints between member states), and ECJ court proceedings



Source: OECD Structural and Demographic Business Statistics

Figure 1.
Average share of
micro firms in total
number of firms per
country, 2004-2012

for infractions against common market regulations. Index values for both dimensions of integration exist for 2004-2012 period, range from 0 to 100, and are increasing in the levels of integration, with weights for the underlying factors derived through principal component analysis.

The SMKT indicator can be interpreted as the share of economic activity of a member state conducted with the EU single market at the expense of economic activity conducted in home and other world markets. The distinction is salient given that re-orientation of economic activity toward the single market implies even greater exposure to competition as the rules of the EU Single Market prohibit imposition of product and factor barriers on other members. The focus on only the micro firms also mitigates concerns of a feedback loop from firm activity to the single market index since micro firms are primarily inwardly oriented and not likely to compete on international markets in the shorter-run.

Higher levels of SMKT indicate that economic activity is becoming more concentrated on the EU internal market relative to domestic and world markets. Greater economic interdependence with the EU expands the size of home markets and provides opportunities for entrepreneurial learning and specialization; however, it also generates greater competitive pressures that crowd out low-efficiency firms and diminish expected profits. Increased prevalence of EU employees in domestic labor force stimulates demand for variety at home. Furthermore, immigrants bring new business practices and ideas and, down the line, themselves increase entrepreneurial supply in the host country (Baycan-Levent and Nijkamp, 2005).

The POL index increases in EU member country's participation in the Schengen zone and monetary union, as well as in better compliance with EU law. The Schengen zone is the EU's area of checkpoint-free travel between member countries. The removal of passport

requirements and border checkpoints facilitates transportation, business travel, and tourism within the territory of the zone, increasing demand for variety and profitability of entrepreneurial opportunities. The adoption of euro as the official currency, and joining the European Exchange Rate Mechanism reduces the costs of operating a business and lowers exchange and interest rate uncertainty, making start-up capital acquisition at home or from other EU members less costly. Additionally, institutional conformity signals compliance with various EU regulations that serve to protect consumers and businesses alike from unfair competition practices, intellectual property theft, state favoritism of certain firms, as well as other tortious acts.

To test the relationship between EU integration and micro firm prevalence in 24 EU countries between 2004 and 2012, I estimate the following reduced form equation:

$$\log\left(\frac{\text{MICRO}_{it}}{\text{LABOR}_{it}}\right) = \beta_1 \text{SMKT}_{it} + \beta_2 \text{POL}_{it} + \Theta \mathbf{X}' + \alpha_i + \delta_t + \varepsilon_{it}, \quad (1)$$

where MICRO denotes the number of enterprises one to nine employees in size, LABOR is labor force size (World Bank WDI), \mathbf{X} is the vector of control variables, α_i and δ_t are the country and year fixed effects, respectively, and ε_{it} is the error term. Controlling for covariates, positive and statistically significant coefficients β_1 and β_2 are suggestive of regional economic and political integration contributing toward faster rise of an entrepreneurial economy within EU member countries.

Previous literature points to the importance of demographic, economic, and institutional determinants of entrepreneurial activity (see e.g. Sambharya and Musteen, 2014; Bjørnskov and Foss, 2008; Nystrom, 2008; Verheul *et al.*, 2001). Remaining independent variables control for a range of country-level characteristics such as the level of development (log of real GDP per capita, World Bank WDI), unemployment rate (World Bank WDI, ILO estimate), institutional quality (the composite Fraser Institute's Economic Freedom of the World Index)[10], secondary and tertiary education attainment levels (percentage of working-age population, CEPII Institute), population density (people per square kilometer of land area, World Bank WDI), percentage of urban population (World Bank WDI), and labor force participation rate for ages 15+ (World Bank WDI).

To the extent that entrepreneurial culture matters for entrepreneurship (see e.g. Wennekers *et al.*, 2007), it will be absorbed in the country-specific fixed effect as cultural attitudes can be considered largely time-invariant over shorter periods for most widely used indicators of national culture (e.g. Schwartz, Hofstede). Other time-invariant determinants of entrepreneurship such as historical circumstances, geography, post-socialist heritage, and legal systems are likewise controlled for by this method. Table I reports summary statistics for all variables included in the empirical analysis.

4. Empirical results

4.1 Main estimates

Table II reports parameter estimates from Equation (1). Empirical results from several specifications suggest that micro firm density increases in the levels of single market (economic) and political integration, although the coefficient of political integration becomes statistically significant only in the full-control model. For a unit increase in SMKT, the number of micro firms per capita rises on average by 1.6 percentage points, and by 0.6 percentage points for a unit increase in POL, all else equal. For a one standard deviation increase in SMKT (about 10 index points) micro firm density increases by about 16 percentage points. At the same time, for a one standard deviation increase in POL (about 12 index point), micro firm density increases by 7.2 percentage points.

Variable	Mean	SD	Min.	Max.
Share of micro firms in total number of firms (%)	90.54	5.13	69.75	97.43
(Log) micro firm density	-2.686	0.447	-3.855	-1.853
(Log) new net micro firm density	-6.219	1.145	-10.536	-3.134
Single market integration	40.92	10.29	21.68	75.88
Political integration	77.36	11.76	46.78	97.95
Real GDP per capita (USD)	\$26,557	\$13,526	\$7,634	\$50,695
Labor force participation rate (%)	58.67	4.70	48.10	71.1
Unemployment rate (%)	8.61	4.00	2.80	25.20
Population density	165.11	209.33	17.16	1310.80
Urban population (%)	72.64	11.54	49.85	97.73
Secondary education (%)	82.90	11.47	45.90	97.68
Tertiary education (%)	20.21	6.42	10.07	32.07
EFW index	7.47	0.35	6.55	8.40
Self-employment (% of total employed)	15.91	6.18	7.9	36.6

Notes: Summary statistics calculated from Table II specification (3) and specification (4) (only for self-employment rate)

Table I.
Descriptive statistics

Dependent variable	Log micro firm density (no. of micro firms per labor)		
	(1)	(2)	(3)
Single market integration	0.024* (0.013)	0.024* (0.012)	0.016* (0.009)
Political integration	0.007 (0.006)	0.006 (0.004)	0.006* (0.004)
Unemployment rate		0.002 (0.012)	0.025 (0.017)
Population density		-0.004 (0.007)	0.004 (0.006)
Urban population share		-0.052 (0.075)	-0.001 (0.036)
Labor force participation rate		-0.033 (0.021)	-0.039 (0.024)
(Log) real GDP per capita			2.940* (1.525)
Secondary education (%)			-0.029 (0.025)
Tertiary education (%)			-0.028 (0.031)
Economic Freedom (EFW) index			-0.595* (0.303)
Observations	206	206	205
Countries	24	24	24
R ²	0.28	0.31	0.44

Notes: Standard errors (in parentheses) are clustered at the country level. All specifications include country and year fixed effects. Specifications (1) and (2) additionally control for the number of remaining firms in the economy. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table II.
Fixed effects
regressions of micro
firm density on EU
economic and political
integration indices for
24 EU countries,
2004-2012

4.2 Robustness checks

To further explore the relationship between entrepreneurship and EU integration, three additional equations are estimated:

$$\log\left(\frac{\Delta\text{MICRO}_{it}}{\text{LABOR}_{it}}\right) = \beta_1\text{SMKT}_{it} + \beta_2\text{POL}_{it} + \Theta\mathbf{X}' + \alpha_i + \delta_t + \varepsilon_{it}, \quad (2)$$

$$\left(\frac{\text{MICRO}_{it}}{\text{TOTAL}_{it}}\right) = \beta_1\text{SMKT}_{it} + \beta_2\text{POL}_{it} + \Theta\mathbf{X}' + \alpha_i + \delta_t + \varepsilon_{it}, \quad (3)$$

$$\text{SELF}_{it} = \beta_1\text{SMKT}_{it} + \beta_2\text{POL}_{it} + \Theta\mathbf{X}' + \alpha_i + \delta_t + \varepsilon_{it}, \quad (4)$$

where TOTAL is the total number of firms in a country (OECD), and SELF is the self-employment rate (World Bank WDI). Equation (2) examines whether and how EU integration affected the net entry rate of micro firms per labor[11]. Equation (3) relates the share of micro firms in total number of firms with EU integration, while Equation (4) examines self-employment rate as a widely used alternative indicator for entrepreneurship. Results from the three estimated equations are reported in Table III.

Parameter estimates from Table III suggest that single market integration is positively and significantly associated with net entry rate of micro firms per labor, share of micro firms in total number of firms, as well as self-employment rates. A unit increase in SMKT is associated with a 7.4 percent increase in net new micro firm density (net entry rate). Additionally, the share of micro firms in total firms and self-employment rate increase by about 0.23 and 0.1 percent, respectively, a unit increase in SMKT. For a one standard deviation increase in SMKT (about 10 index points), net entry increases by as much as 74 percent. However, the share of micro firms in total firms increases by 2.3 percent while self-employment rate increases by about 1 percentage point, a rather modest effect.

With respect to political integration, results are statistically significant in all but specification (2) in Table III. Results suggest that a unit increase in political integration is significantly associated with a 3.5 percent increase in new net micro firm density and only 0.05 percent increase in the rate of self-employment. For one standard deviation increase in POL (about 12 index point), net new density is higher by 42 percent and self-employment by 0.6 percent, also a modest effect. However, joint increases in both SMKT and POL by one standard deviation are associated with about 1.6 percent increase in self-employment rate, a quarter of its standard deviation.

Overall, the results so far shed light on the impact of EU's common market on industrial restructuring within EU countries. Controlling for economic, demographic, and institutional environment, an increase in size and competitiveness of EU's common market exhibits direct correlation with the mass of micro firms and self-employment in an economy. These findings provide some preliminary evidence on the positive influence of globalizing forces and entrepreneurial activity hypothesized in the previous literature. Consequently, greater focus on facilitation and promotion of entrepreneurship should continue to be a

Dependent variable	Log new net density (1)	Micro firm share (%) (2)	Self-employment (%) (3)
Single market integration	0.074* (0.042)	0.228** (0.086)	0.096* (0.046)
Political integration	0.035** (0.016)	0.046 (0.049)	0.050*** (0.017)
Unemployment rate	-0.098 (0.098)	0.289* (0.145)	-0.172* (0.088)
Population density	0.061 (0.046)	0.139*** (0.040)	0.008 (0.022)
Urban population share	0.097 (0.077)	-0.426 (0.369)	0.184 (0.275)
Labor force participation	0.114 (0.096)	-0.222 (0.230)	-0.036 (0.096)
(Log) real GDP per capita	2.870 (4.007)	29.283* (16.246)	-4.314 (6.074)
Secondary education (%)	-0.141 (0.151)	-0.129 (0.302)	-0.284* (0.124)
Tertiary education (%)	-0.041 (0.216)	-0.234 (0.391)	-0.015 (0.17)
Economic Freedom (EFW) index	0.545 (1.222)	-6.090 (3.652)	-2.594** (1.235)
Observations	144	205	215
Countries	24	24	24
R ²	0.18	0.40	0.35

Table III.
Fixed effects
regressions of other
entrepreneurial
measures on EU
economic and political
integration indices for
24 EU countries,
2004-2012

Notes: Standard errors (in parentheses) are clustered at the country level. All specifications include country and year fixed effects. Equation (1) and (2) additionally control for the number of remaining firms in the economy. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

priority on EC policy agenda, as EU countries continue to deepen their economic interdependence by adopting the euro, complying with EU single market laws, and allowing for easier cross-border travel and migration.

4.3 Some evidence on the type of entrepreneurship

Thus far, the discussion has been largely confined to the changes in the quantity of entrepreneurship in response to EU integration. However, it is important from the standpoint of policy to understand the causes of entrepreneurial initiatives, i.e. its quality. On the one hand, economic reorientation of EU countries toward the common market can increase the number of profitable opportunities, giving rise to more opportunity- and innovation-driven type of entrepreneurship that a country would wish to promote. On the other hand, increased competitive pressures and outsourcing due to integration may induce individuals to start businesses out of necessity, suggesting that EU integration and corresponding entrepreneurship correlate with a slowdown in growth and productivity within a country.

To take the first step in untangling the type of entrepreneurship that EU integration encourages, I employ the Global Entrepreneurship and Development (GEDI) Index (Ács and Szerb, 2012), which takes into account countries' institutional and demographic context to rate entrepreneurial quantity as well as quality across countries. GEDI index considers the type of entrepreneurship that is productivity-enhancing, innovative, market expanding, and typically growth-oriented with an international outlook (Ács and Szerb, 2012, p. 1)[12]. Therefore, the GEDI index increases in more positive social attitudes toward entrepreneurs and entrepreneurship, prevalence of medium- to high-technology startups created by educated individuals seeking to exploit profitable opportunities, and efforts by entrepreneurs to innovate and create value, either by inventing new products and production processes, increasing employment, or internationalization.

A positive and statistically significant association between EU integration indices and GEDI index would thus indicate that increases in the size and competitiveness of markets expand, rather than reduce, profitable venture opportunities within countries. Unfortunately, given data for GEDI index start in 2011, leaving an insufficient number of data points for meaningful statistical inference. Nevertheless, to tease out the hypothesized relationship to the extent that is possible, I regress, without controls, the 2012 value of the GEDI index on SMKT and POL individually, then jointly, and lastly with their interaction. Although statistically significant results are not found for POL index, it can be seen that SMKT and POL compound each other, with the marginal impact of each index becoming more economically significant as the other increases in its level. Results are reported in Table IV.

Lastly, I average out SMKT and POL indices over the 2004-2012 period and depict their simple linear relationship using bivariate scatterplots. The depicted correlations in Figures 2 and 3 document the existence of a direct association between quality-weighted entrepreneurial

Dep. Var.	OLS			
	(1)	(2)	(3)	(4)
GEDI (2012)				
SMKT	0.0035*** (0.264)		0.0035 (0.001)	-0.0607*** (0.017)
POL		0.000 (0.002)	0.000 (0.002)	-0.028*** (0.006)
SMKT × POL				0.000756*** (0.000)
Observations	19	19	19	19
R ²	0.20	0.00	0.20	0.38

Notes: Robust standard errors in parentheses. Regressions estimated for the year 2012 only. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table IV.
GEDI index and EU
integration, 2012

Figure 2.
Bivariate relationship
between GEDI index
in 2012 and 2004-2012
average in SMKT
index

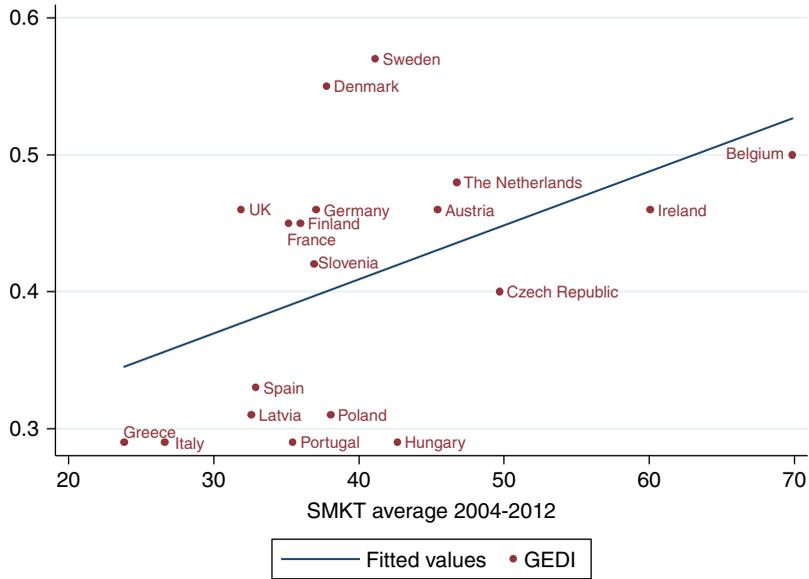
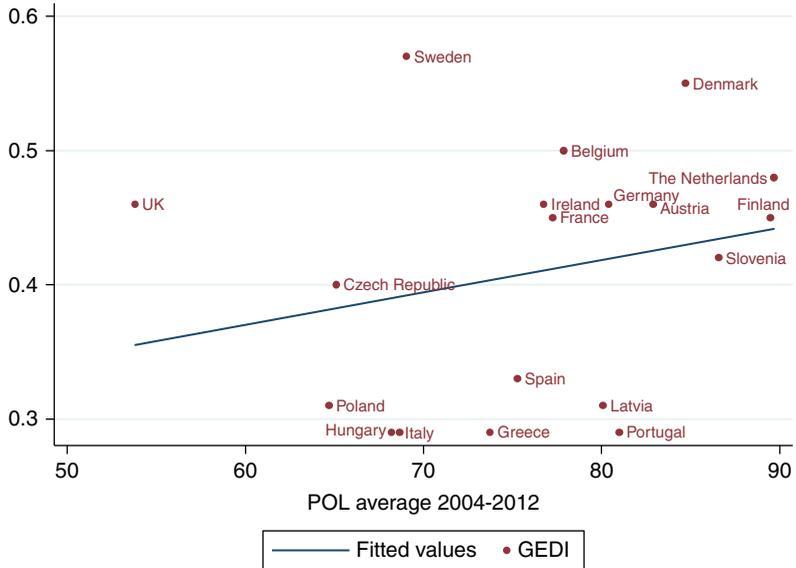


Figure 3.
Bivariate relationship
between GEDI index
in 2012 and 2004-2012
average in POL index



quality and EU integration. Overall, the results seem to confirm the positive relationship between growth-enhancing entrepreneurship and opportunities arising from the process of global economic and political integration.

5. Concluding remarks

In 2004, ten new countries joined the EU's common market and committed to joint institutional evolution and cooperation within the 25-member bloc. Membership and

continued integration in EU's political and economic institutions have been shown to positively correlate with living standards within EU member states. However, the impact of the changing economic and institutional landscape on the entrepreneurship levels, an important correlate of economic development, has largely been neglected in the empirical literature.

A globalizing economy can crowd out smaller firms and depress expected profits in an increasingly competitive environment, or alternatively, it can provide an impetus for opportunity-seeking entrepreneurship through knowledge and productivity externalities arising from increased cross-national flows of goods, capital, and migration that enterprising individuals can exploit. Has the linkage between economic integration and entrepreneurship been operative, and if so, in what direction? To provide a preliminary answer to this question, this paper examines how EU integration affected the prevalence of business startups and self-employment rate within member states.

Specifically, this paper examined how EU economic and political integration have affected the rates of self-employment, density of micro firms (one to nine employees) per labor (net) entry rate of micro firms per labor, and share of micro firm startups in total number of firms in 24 EU countries between 2004 and 2012. The main finding is that single market integration – expressed through greater intra-EU flows of goods, capital, and people as the share of national economy – is significantly and positively associated with the above measures of entrepreneurship. Similar, though weaker, results are found for political integration, although non-association between political integration and the share of micro in total firms within a country was also uncovered.

The results presented in this paper are consistent with the hypothesis that globalization induced the rise of entrepreneurship around the world, and furthermore suggest that policies promoting integration within regional agreements (and economic liberalization more generally) can improve economy's dynamism through promotion of entrepreneurial activity and engagement. These findings may be especially relevant in light of the 2016 "Brexit" referendum on the UK's withdrawal from EU membership. The vote to withdraw from EU membership sparked fears among small businesses owners in the UK over losing access to the EU Single Market, infrastructure and energy investments, acquisition of new talent, and finance[13]. The membership withdrawal, scheduled for March 2019, is hence likely adversely impact entrepreneurial activity and opportunities in both the UK and EU. Possible directions for future research include exploiting the variation from larger cross-country data sets to examine the effects of economic integration on entrepreneurial intentions and quality of entrepreneurial activity disaggregated by industry, employment size, and growth potential.

Notes

1. Furthermore, Klapper *et al.* (2006, Table V) report that, on average, 63 percent of new limited liability corporations in 1998-1999 across 23 western and transition European countries had fewer than ten employees.
2. For example, Albuлесcu and Tămăşilă (2014) find that inward FDI stimulated opportunity-driven entrepreneurs in 16 European countries between 2005 and 2011.
3. An early theoretical investigation as to why firms emerge at all was notably conducted by Coase (1937), who noted that an ever-increasing specialization within a market economy requires an "integrating force" that guides economic activity, either in the form of the price mechanism or the entrepreneur-coordinator. In this framework, the extent of the reliance on the latter will largely depend on the magnitude of the relative costs of utilizing the market price mechanism – the transaction costs. The deepening of economic-institutional integration of a country with the EU's common market (e.g. by facilitated cross-border capital and movement, technology spillovers,

and commonly adopted rules and regulations) can reduce the transaction costs of operating in the open markets and stimulate domestic entrepreneurial activity in two ways: already existing firms (foreign-owned and domestic) tend to downsize and look to subcontract formerly in-house activities to outside small-scale entrepreneurs, and potential entrepreneurs can engage in entrepreneurial activity by benefiting from lower capital cost, knowledge spillover, and new market niches.

4. The KOF index combines three dimensions of globalization: economic, political, and social (cultural) globalization.
5. See Badinger and Breuss (2011) for an exhaustive review of quantitative effects of EU integration.
6. This measure is further discussed in Section 3 of this paper.
7. In an earlier study, Blanchflower (2000) finds that increases in self-employment do not significantly impact growth in OECD countries. However, Carree and Thurik (2010) point out that this study may be subject to inconsistencies as it uses data of low cross-country comparability.
8. Two remaining dimensions are not included in this paper: the homogeneity index, and the symmetry index.
9. Intra-EU here refers to the EU-14, the cluster of 14 “old” and more developed Western EU members that joined by 1995 (excluding Luxembourg).
10. The composite index ranges from 0 to 10 and is increasing in the quality of institutions proxied by the five dimensions: size of government, legal structure and property rights security, access to sound money, freedom to trade internationally, and regulation of credit, labor, and business. The Economic Freedom of the World (EFW) (Gwartney *et al.*, 2015) index has been cited in hundreds of scholarly studies that find a positive correlation between EFW and various “good” socio-economic outcomes (Hall and Lawson, 2014).
11. Because $\ln(x)$ is defined only for when $x > 0$, this specification considers only the years in which the net entry of micro firms was positive overall. Positive effect of integration indices would indicate that this positive net entry is even faster with higher integration. Using only the ratio first-difference (can be negative or positive) of micro firms to labor force, no significant results are obtained.
12. The GEDI index is measured on 0-1 scale and rests upon 14 pillars that speak to entrepreneurial attitudes (opportunity perception, startup skills, non-fear of failure, networking, cultural support), entrepreneurial actions (opportunity startup, tech sector, quality of human resources, competition), and entrepreneurial aspirations (product innovation, process innovation, high growth, internationalization, risk capital).
13. “What Brexit means for the UK’s small businesses,” *The Guardian* (June 24, 2016), www.theguardian.com/small-business-network/2016/jun/24/what-brexit-means-uk-small-businesses. Also see Cumming and Zahra (2016) for a discussion on the hypothesized implications of Brexit for entrepreneurship in the UK.

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