



The entrepreneurial gains from market integration in the new EU member states

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Abstract This paper investigates the impact of economic integrations on entrepreneurial outcomes. The study bridges a gap between the literature on entrepreneurship and trade by exploring how international trade and global value chain (GVC) integration influence the share of start-ups and high-growth firms in manufacturing industries in eleven Central and Eastern European (CEE) member states of the European Union (EU) during the 2011–2016 period. Exports, imports, and forward GVC participation increase the share of start-ups and high-growth firms, and these effects are evident in low- and high-technology-intensive industries. The effects of trade and GVC integration are more pronounced

among the first group of CEE that joined the EU than among latecomers.

Keywords International trade · Global value chains · Start-ups · High-growth firms

JEL classifications F14 · F15 · L26

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1 Introduction

The last few decades have been marked with an unprecedented progress in the removal of the political and trade barriers across the world. In Europe, the most important manifestation of this process was the expansion of the European Union (EU) on Baltic and Central and Eastern European countries (CEE). The admission of CEE countries in the EU family paved the way to their subsequent transformation into the largest European production hub. In recent years, however, the wave of Euroscepticism spawned across the region, questioning common arguments in favour of the EU enlargement. The newly arisen need of policymakers to defend EU membership necessitates a thorough evaluation of the economic benefits of EU integration (Mann 2015; Hobolt 2016; Pavcnik 2019).

Macroeconomic literature argues that integrations help countries to create jobs and grow faster by facilitating flows of knowledge, skills, and technology and by creating new market opportunities (Mann 2015; Hagemeyer 2018), but the exact microeconomic mechanisms through which these effects materialise received

limited attention. Entrepreneurship literature does state that job creation and growth effects take place through behaviour of firms, particularly start-ups and high-growth firms (Audretsch 2012). However, with the exception of the few relatively recent studies, the impact of integrations on the new business formation and on the growth of firms has not been examined at all (Sambharya and Musteen 2014; Tarabar 2018; Moschella et al. 2019).

Ever since the seminal work of Birch (1979), it has been argued that start-ups and high-growth firms (HGFs) make significant contribution to the aggregate employment and productivity growth (Henrekson and Johansson 2010; Westlund and Olsson 2011; Audretsch 2012; Amat et al. 2013; Lee 2014; Arrighetti and Lasagni 2013; Coad et al. 2014; Coad et al. 2017; van Weele et al. 2018; Coad and Srhoj 2019). Through demonstration effects, spillovers to upstream suppliers or transfer of advanced production and management skills and high-quality inputs to downstream firms, these firms increase efficiency of surviving incumbents, facilitate innovations, and increase consumer welfare (Vertesy et al. 2017; de Nicola et al. 2019). Evidence also suggests that these firms facilitate social inclusion of youth, immigrants, or discouraged workers (Daunfeldt and Halvarsson 2015). It is for these reasons that support to start-ups and HGFs is high on the agenda of policy priorities in the EU and across the world.

Our paper extends the existing body of knowledge by offering a novel perspective on the gains from the market integration, the one focused on the entrepreneurial outcomes. In this way, it bridges the gap between the international trade and the entrepreneurship literature. Using the panel of manufacturing industries from eleven CEE countries (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia), we investigate whether the intra-EU trade flows (exports and imports) and the integration of CEE industries in the forward and backward EU value chains (GVC participation) increase the share of entrants and high-growth firms in the total population of firms in the analysed countries. The analysis takes into account the technological intensity of individual industries and the timing of entry to the EU, which are two issues not previously addressed within the nexus of literature covering both the international trade and the entrepreneurship.

Overall, our findings show that being inside economic integrations yields entrepreneurial gains across low-

and high-technology-intensive sectors, but these gains seem stronger among early entrants to the EU. Exports to and forward integration in GVC networks of advanced EU economies exhibit the strongest effects on increase in the share of start-ups and high-growth firms. Thus, it can be concluded that the gains from integrations mainly take place through easier access to more sophisticated and advanced markets. The results, therefore, question the existing industrial strategies of these countries. CEE are characterised by deep backward integration in global value chains (i.e. foreign value added embodied in domestic products), while our study finds strong effects of the forward GVC integration (domestic value added embodied in foreign products) on both entrepreneurial outcomes.

Our findings may help those policymakers interested in the impact of economic integrations on entrepreneurial outcomes to enhance growth opportunities and create new jobs, but also to raise public awareness in EU member states about the benefits of European integrations. Over past decades, the EU started losing its pace with global competitors in generation of firms capable of setting global competitive frontiers (Vertesy et al. 2017). Its policymakers (but also those of other parts of the world) are in need of evidence-based inputs that can help formulation of policies for fostering creation of start-ups and high-growth firms. In the light of the future European enlargement, the output of our study might raise the awareness of policymakers and public opinion in candidate countries about the prospective benefits and caveats of the EU accession.

The rest of the paper is organised as follows. Section two provides a conceptual framework of research. Section three contains discussion about data and methodology, which is followed by the discussion of findings in Section four. Section five concludes and provides implications for policymakers, the limitations of this research, and guidelines for future research.

2 Conceptual framework

Recent decades have witnessed a surge of academic interest in start-ups and rapidly growing enterprises. Theoretical propositions and empirical evidence of the beneficial effects of entrepreneurship on job creation and economic growth (Acs et al. 2009; Audretsch 2012) have fallen on fertile ground among policymakers in need for solutions for pressing societal challenges

such as unemployment or weak economic growth. In a parallel development, start-ups have been recognised as agents of restructuring that take risks, improve market efficiency, introduce innovations, and increase overall consumer welfare through a greater variety of goods (Audretsch et al. 1999; Fritsch 2008; Doran et al. 2016).

The empirical literature investigated the relevance of individual factors for the creation of start-ups and HGFs from two perspectives. The first perspective is concerned with individual and organisational characteristics. From the labour economics point of view, the formation of new enterprises is seen as an occupational choice between employment and self-employment (Santarelli and Vivarelli 2007), while the knowledge spillover theory of entrepreneurship relates the inclination of individuals towards self-employment with the exploitation of knowledge deemed as irrelevant by incumbent organisations (Acs et al. 2009; Audretsch 2012). Other contributions have related start-ups and high-growth firms' occurrence with firm size and age (Arrighetti and Lasagni 2013; Moschella et al. 2019), R&D expenditure and innovations (Coad and Rao 2008), and access to resources and individual characteristics of entrepreneurs (Audretsch 2012).

The second research perspective is concerned with the contextual determinants of entrepreneurial outcomes. Several studies highlighted the relevance of the quality of institutional framework (Acs et al. 2009; Davidsson and Henrekson 2002; Krasniqi and Desai 2016; Segarra-Blasco et al. 2018). In others, the knowledge and technology sharing between firms due to geographical proximity, social capital, or governance linkages have been recognised as important (Audretsch 2012; Mohr et al. 2014). Finally, it was suggested that technology-intensive environments offer more business opportunities and greater potential for differentiation, and as such may be conducive to formation of new and rapidly growing businesses. However, empirical findings only partially support such thesis ranging from negative, over insignificant to non-linear and positive results (Henrekson and Johansson 2010; Wywrich 2010; Audretsch 2012; Arrighetti and Lasagni 2013; Daunfeldt et al. 2016).

An area that was largely neglected in existing studies is the international context in which firm entry and growth take place. This is surprising if one knows that most of studies reported positive effects from exposure to different internationalisation channels such as exports, imports, foreign investment, or participation in

GVCs (Hagemejer 2018; Segarra-Blasco et al. 2018; Coad and Srhoj 2019). While GVC participation enables transfer of knowledge and technology (Tan et al. 2018), the entrepreneurial opportunities seem also related to sourcing of superior inputs and technology from foreign upstream firms (Reyes 2018), demonstration effects, and import competition effects on domestic market efficiency (Goswami et al. 2019).

All of the above effects are more pronounced in relationships taking place within economic integrations. Integration of national markets into a single common market facilitates the formation of new and rapidly growing enterprises through increased market size, easier access to resources, greater opportunities for learning, and knowledge and technology spillovers (Tarabar 2018). Common market also opens opportunities for building a greater social, institutional, and cultural proximity between members of integration, but at the same time leads to the reallocation of resources from inefficient use to more productive opportunities within existing sectors and in newly emerging industries (Cuaresma and Wörz 2005). In a parallel development, integration in global value chains and exporting opens up above-average opportunities for growth (Du and Temouri 2015; Grazzi and Moschella 2018; Moschella 2019). Domestic firms have to produce more efficiently, which leads to lower prices, larger variety, and better product quality (König 2015).

Building on previous insights, we propose a research framework that bridges a gap between entrepreneurship and economic integration literature. Empirical literature found that formation and enlargement of economic integrations such as EU have brought along intra-EU trade diversion effects (Egger and Pfaffermayr 2013). We explore whether diversion of trade and GVC participation towards other members of integration at the expense of the rest of the world facilitates increases in shares of start-ups and HGFs in the total population of firms. Social, cultural, and institutional proximity between members of integration make it easier to exploit gains from increased demand, access to resources, and knowledge and technology spillovers (Tarabar 2018). These effects may be particularly relevant for firms from less-advanced members of integration such as CEE member states of the EU. As such countries are characterised with weak entrepreneurial and innovation systems (Segarra-Blasco et al. 2018), trade and GVC participation may turn into the most important source of entrepreneurial opportunities for their businesses.

We consider the exports from individual country to the common EU market to be the first channel of influence. A positive effect of exports on firm growth has already been recognised in the literature (Moschella 2019; Coad and Srhoj 2019). Earlier findings reveal that greater market coverage creates more business opportunities for start-ups and facilitates growth of firms (Colantone and Sleuwaegen 2008). A wider customer base of common market enhances such effects, as integration assumes presence of greater social and cultural proximity between agents and the absence of trade barriers. Exporting also provides learning-by-exporting effect (Wagner 2012; Ipinnaiye et al. 2017) that may be magnified within common market due to previously described proximities. New firm formation may also be triggered by enhanced innovative potentials and new knowledge spillovers on the larger markets (Tarabar 2018).

Imports from common EU market is the second channel that might influence local business dynamics. Imports are an important driver of knowledge and technology transfer (Wagner 2012), which contributes to firms' growth and new firm formation as well (Acs et al. 2009). Importing in countries such as CEE enables the use of higher-quality foreign inputs than local ones, the adoption of higher-quality standards, and the extraction of technology embodied in imported intermediates and capital goods (Wagner 2012; Ipinnaiye et al. 2017). While these effects are common to trade between most pairs of partners, they are likely to be more pronounced within economic integration due to the absence of impediments to imports and previously described proximities between agents. Furthermore, if trade complementarities in a sector are rising as a result of increasing sourcing of intermediates from abroad, then relatively more new businesses are formed (Colantone and Sleuwaegen 2008).

H1: Diversion of exports (H1a) and imports (H1b) of final and intermediate products to the EU market increases the share of new businesses and high-growth firms in the total population of enterprises in CEE countries.

Integrations create opportunities for start-ups and high-growth firms also through participation in global value chains of industries from their member states. Commonly, two channels of GVC integration are distinguished as backward and forward ones (Banga 2013;

Fauceglia et al. 2018). Backward channel refers to the integration of foreign producers into exports of indigenous industries. It is characterised by a relatively high share of foreign value added embodied in domestic exports and typical for advancing countries whose producers perform standardised segments of production within value chains. The entrepreneurial opportunities within backward GVC integration arise from the access to the larger variety and quality of foreign inputs, demonstration effects, and improvements in technological sophistication of domestic exporters (Gehl Sampath and Vallejo 2018). Forward integration in GVC takes place through the embodiment of the domestic value added to the exports of the other countries. As such, it implies climbing along ladders of quality and technological sophistication as well as the demand for domestic inputs that opens opportunities for growth and entry (Vrh 2018).

While being argued in theoretical and empirical literature, the beneficial effects of GVC participation are not always warranted for at least two reasons. Lee (2019) provides examples of technologically superior organisations being reluctant to disclose and share their strategically important knowledge to the upstream and downstream firms within the same market even in cases when high social, cultural, institutional, and cognitive proximity of common market create space for such flow of resources to take place. Along similar lines, Alfaro et al. (2019) develop and empirically test the model that shows how contractual frictions, the productivity of final goods, and the position of inputs in the GVC ladder may act as barriers to the transfer of knowledge between entities in GVC. Analyses also show that technological changes tend to spillover differently, depending on the position of firms in the chain (Giovannetti et al. 2015).

GVC analyses have argued that value chains could offer local firms from advancing countries the access to new markets and new technologies, and provide them the opportunity for learning and specialisation in niche product categories (Pietrobelli 2008; Mohr et al. 2014; Gehl Sampath and Vallejo 2018). GVC may also provide opportunities for various spillovers from foreign to domestic firms. Several studies also show that HGFs have a larger degree of integration in GVC (Mason and Brown 2010; Mohr et al. 2014; Segarra-Blasco et al. 2018).

H2: Forward (H2a) and backward (H2b) participation in the EU GVC increase share of new

businesses and high-growth firms in the total population of enterprises in CEEC countries.

As pointed earlier, one of the open issues in analyses of start-ups and HGFs is the role of technological intensity (Almus and Nerlinger 2000; Hölzl 2009; Duand Temouri 2015; Segarra-Blasco et al. 2018). It appears that in advanced countries, HGFs are more R&D intensive, while in advancing countries, resources other than technology may be more relevant for entrepreneurial opportunities (Braga et al. 2018; Segarra-Blasco et al. 2018). Coad and Srhoj (2019) found that HGFs are less likely to be from high-tech manufacturing sectors in Slovenia and Croatia. However, high-technology industries from advancing countries may also benefit from trade and GVC integration if the share of such firms exceeds minimum threshold for sectoral spillovers to exist (Banga 2013). For this reason, one can expect positive effects to exist in both low- and high-technology-intensive industries.

H3: Intra-EU trade and GVC integration increase share of new businesses and high-growth firms in the total population of enterprises in CEEC countries in low- and high-technology-intensive industries.

Within integrations, intra-periphery growth of trade has stronger effects than intra-core trade (Egger and Pfaffermayr 2002). The notion of proximity is a multi-dimensional concept that involves social, cultural, and institutional as well as cognitive proximity. Within EU, ‘old’ and ‘new’ CEE EU member states share many elements of institutional proximity, but being at different stages of development, their cognitive proximity may be low while social, cultural, and institutional proximity within CEE may act as a mediating effect in the relationship between trade and GVC integration and entrepreneurial outcomes. On the other hand, within less-advanced countries, such as CEE, the knowledge resources relevant to meet sophisticated demand and to compete at world economic frontier may be scarcer than in interactions involving partners from EU-15. It is for this reason that one may expect both destinations to be relevant for entry and growth of firms.

H4: Trade linkages and GVC integration involving CEE (H4a) or ‘old’ EU member states (H4b) increase the share of new businesses and high-growth

firms in the total population of enterprises in CEECs countries.

The gains from integration may also depend on the timing of entry to an integration. The theory suggests that early entrants are more likely to capture the competences and capabilities relevant for competition (Grazzi and Moschella 2018). The first cohort of entrants that joined the EU in 2004 succeeded in attracting impressive inflow of FDI and in integrating in value chains of other EU member states. Latecomers in this process that joined the EU in 2006 and 2013 were less successful in these processes (Segarra-Blasco et al. 2018). Therefore, it is possible that the cohort of early CEE entrants to the EU experienced stronger gains from trade and value chain integration than countries that joined the EU at the later point in time. These advantages can be expressed in terms of learning by exporting and importing, patenting, agreements with local retailers, and application of standards. On the other hand, the late mover has the advantage of risk reduction through the ‘wait and see’ approach and avoiding the mistakes early movers experienced.

H5: Timing of entry to the integration has a mediating role in the relationship between trade, GVC participation, and share of start-ups and high-growth firms in the total population of enterprises in CEE countries.

Putting all these pieces together, it can be argued that economic integrations influence entrepreneurial outcomes in CEE through trade and GVC participation. Our study aims to explore in what way each of these individual channels contributes to the entry and growth of businesses in the CEE region and whether the technological intensity, origin of partners, and the timing of entry to the EU have a mediating role in this relationship. To the best of our knowledge, no study prior to ours attempted to investigate the impact of either trade channels or GVC participation on firm entry and growth, taking into account any or all of these issues. Our study aims to fill this gap.

3 Model and methodology

To investigate the relationship between entrepreneurial outcomes and intra-EU trade and GVC participation, a

model is developed that takes the following form:

$$\text{Ent.outcome}_{ijt} = \alpha_0 + \alpha_1 \text{Ent.outcome}_{ijt-1} + \beta_1 X_{ijt} + z_{ijt} + u_{ijt} + v_{ij} \quad (1)$$

where the dependent variable is the one of previously introduced entrepreneurial outcomes defined as shares of start-ups and HGFs in total enterprise population of industry i of country j in period t . Conceptually, our study is close to existing research that aimed to answer which factors and forces can facilitate higher share of different firm categories in the total population of enterprises, a question that is at core focus of policy incentives for stimulation of entrepreneurship (Krasniqi and Desai 2016).

The share of start-ups is defined as the percentage of firm births in the total number of firms in country j in sector i in year t . While the definition of start-ups is a relatively straightforward issue, the definition of HGFs deserves some reflection. The entrepreneurship literature does not provide definite answer about the variables (sales or employment) or the time period within which the phenomenon should be measured (Coad et al. 2014). Differences exist also with respect to the use of relative (in respect to a population of firms in sector or country) or absolute growth measures (Arrighetti and Lasagni 2013). Coad et al. (2014) note that findings from most studies do not exhibit sensitivity to the choice between employment or sales. When it comes to the use of relative or absolute growth measures, it was established that each of these approaches has its advantages, but relative approach hinders the ability of researchers to undertake comparisons across time or countries (Coad et al. 2014).

One of the most specific and definitive guidelines on the definition of high-growth firms is offered by Eurostat-OECD (2007) in the Manual on Business Demography Statistics, where high-growth enterprises are defined in an absolute term as all firms with average annualised growth of either employment or sales above 20% over a 3-year-long period and employing at least ten employees at the beginning of the observed period (Audretsch 2012). Along similar lines, European Commission and Eurostat define high-growth enterprises as firms with average annualised growth of either employment or sales greater than 10% per annum over a 3-year period.

Eurostat offers sectoral data on firms with growth exceeding 20% for the period up to 2013, while the data

for firms with growth above 10% are available for the period covered by our analysis. Since our analysis relies on data pertaining to the number of high-growth firms taken from Eurostat, we adopt the absolute measure of high-growth firms as defined by Eurostat and European Commission (2014) in its Commission Implementing Regulation 439/2014. On the right side, the model includes lagged dependent variable. The higher share of start-ups or high-growth firms in the past may signal attractiveness of industry and opportunities for the above-average returns, and thus attract more entrants or result in even greater number of high-growth firms.

X_{ijt} stands for our key variables of interest measuring the trade and GVC integration of given industries in the EU market. Intra-EU trade variables take several forms defined as the share of EU exports (imports) in total exports (imports) of industry i from country j in period t . In measuring the participation in GVC, we use the value-added approach. Participation in GVC is measured with two measures defined as backward and forward GVC participation, i.e. the share of foreign value-added content (EU value added) embodied in domestic gross exports and the share of domestic value added embodied in foreign gross exports.

Principal level of analysis is concerned with EU-28 as a whole. We then distinguish between linkages within the groups of member states admitted to EU from 2004 onwards (EU-13) and the linkages between CEE and 'old' Western European EU member states also known as EU-15. We are also interested in differences with respect to the type of products involved in intra-EU trade and value chains. For this reason, we distinguish between the final and the intermediate products. Being positioned in lower tiers of value chain and lacking capabilities for development and commercialization of sophisticated products, CEE can be expected to provide higher opportunities for achievement of entrepreneurial gains through flows of products intended for intermediate consumption.

The term z_{ijt} refers to the set of control variables. Here, we were led by the trade-off between theoretical propositions about potential determinants of firm entry and growth and the availability of data. Existing sources are scarce on variables that cover all country-industry-time pairs used in our analysis. This presents potential limitation that could be addressed by future research subject to data availability. The model includes measures of unit labour costs (share of wages in revenues) and investment in machinery and equipment per firm. In

the market segments dominant in CEE, cost-competitiveness acts as a decisive competitive advantage. It can be expected that lower labour costs facilitate entry and growth through a greater availability of the competitive workforce. As production economies, these countries also rely heavily on investment in machinery and equipment as a means of building indigenous production capabilities. Such capabilities may enable firms to offset upward cost pressures, perform more complex and sophisticated activities within the value creation process, and thus increase their growth prospects.

The model also includes a variable measuring the share of foreign enterprises in an industry. Foreign enterprises have been recognised as a source of restructuring, productivity growth, and higher export competitiveness in advancing countries due to their spillover effects on upstream, downstream, and horizontally related enterprises (Colantone and Sleuwaegen 2008; Reyes 2018; Goswami et al. 2019). However, the inflow of foreign enterprises also presents the threat for the established businesses unable to meet high standards of competition. Same factors may act as barriers to entry, thus reducing the share of new businesses in enterprise population.

Our analysis also includes five variables controlling for the quality of institutional framework. These are taken from the World Bank World Governance Indicators database. We control for political stability, perceptions of the quality of public and civil services, government credibility and the quality of policy formulation (government effectiveness), quality of regulatory framework, confidence in rule of law, and perceptions about the control of corruption. By construction, these variables are standardised and ranged from -2.5 to 2.5 , with higher values corresponding to better outcomes. Their inclusion is justified with prediction from the literature that stable and efficient institutional framework is an essential prerequisite for the flourishing of the entrepreneurial activity (Acs et al. 2009; Davidsson and Henrekson 2002; Colantone and Sleuwaegen 2008; Krasniqi and Desai 2016; Segarra-Blasco et al. 2018).

The model also controls for several groups of countries in our sample. Hence, we take as a base category the group of three least advanced CEE, Croatia, Bulgaria, and Romania, and introduce two dummy variables for the Baltic group of countries (Estonia, Latvia, and Lithuania) and for the Visegrad group of countries (Czech Republic, Hungary, Poland, Slovenia, Slovakia). Finally, the model includes control for

technological intensity of industry (Henrekson and Johansson 2010; Wywrich 2010; Audretsch 2012; Arighetti and Lasagni 2013; Daunfeldt et al. 2016) and annual time dummy variables to control for universal cross-sectional shocks. Detailed definition of variables and data sources is provided in Table A1, while descriptive statistics for key variables across countries can be found in Table A3 in Appendix.

Empirical analysis is undertaken by means of the two-step system dynamic panel generalised method of moments (GMM) estimation. The advantage of this estimator is that it builds two estimations, one for the differenced and one for the level equation, and thus provides more efficient estimates. Through instrumentation of predetermined or potentially endogenous variables with their lagged levels and differences, this technique can handle the potential endogeneity of the lagged dependent variable. This technique also allows inclusion of dummy variables. Detailed explanation of the methodology is provided in Section 2 of an Online Appendix to paper.

We expect the effect of trade and GVC integration to materialise after a certain amount of time, since local firms need time to obtain and process relevant information and embrace new opportunities. For this reason, variables measuring trade and GVC integration are lagged one period in the past. Robustness of the model was assessed through random and fixed effects and ordinary least squares estimations. Moreover, the baseline specifications were modified in a way to replace dummy variables for technological intensity and groups of countries with individual country and sector dummy variables. All these sensitivity analyses provide support to our model. Tables with all estimation results and relevant model diagnostics can be found in an Online Appendix (Tables A4–A7).

4 Dataset

Our empirical analysis is based on the dataset compiled from Eurostat Structural Business Statistics (SBS), OECD trade in value-added (TiVA), and World Bank Governance Indicators databases. SBS database provides information on shares of start-ups and high-growth firms in total population of firms, while TiVA contains data required for construction of export, import, and GVC participation indices for manufacturing industries. Finally, World Bank Governance Indicators

database contains information relevant for measures of institutional framework. The analysis covers eleven CEE countries (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia) over the 2011–2016 period. We were able to access data on twelve 2-digit NACE rev2 industries,¹ resulting in a balanced panel of 660 country–industry–year pairs. Since key variables of interest were lagged one period in the past, this left us with the total of 528 observations.

Figure 1 presents the average shares of start-ups and high-growth firms over the analysed period for the whole manufacturing sector, the low- and medium low-technology-intensive, and the medium high- and high-technology-intensive industries. It is evident from there that over the analysed period, the proportion of the new start-ups ranged between 10 and 12% of all enterprises in the manufacturing and in the less technology-intensive sectors. The average share of start-ups in the high-technology-intensive sectors is somewhat lower, but these sectors have higher share of high-growth firms.

The prevalent share of start-ups is in the less technology-intensive industries, such as food industry, but also in some of the high-technology-intensive industries, such as transport equipment (Fig. 2), where CEE experienced a strong inflow of foreign investment during past two decades. Same sectors are characterised with several times higher share of the high-growth firms in the overall population of enterprises. Furthermore, Table A3 in an Online Appendix shows that the shares of start-ups and high-growth firms do not substantially vary across countries.

Across all industries, the EU-28 market accounts for the largest share of CEE exports, imports, and the share of domestic value added embodied in foreign demand (Fig. 3). Here too, we observe high shares of food, textiles, and automotive industries. Somewhat higher shares of EU-28 in CEE exports can be found in the Visegrad group of countries (Czechia, Hungary, Poland, Slovakia, and Slovenia). Finally, the EU-28 market accounts for between 59 and 79% of imports. These figures clearly show strong orientation of CEE producers towards the EU market.

The benefits of market integration also materialise through integration of domestic producers in forward

and backward value chains. Domestic value added of CEE countries participates in overall EU-28 exports with very small shares in each of the analysed industries (Fig. 4). As Table A3 in Online Appendix shows, somewhat higher figures can be found in the Visegrad group of countries with the highest one being observed in Poland (0.06%). The opposite is the case with backward GVC participation. High share of foreign value added embodied in the domestic exports and the low share of domestic value added in foreign exports suggest that these countries produce standardised, price competitive products that bear limited potential for sustainable growth.

5 Results

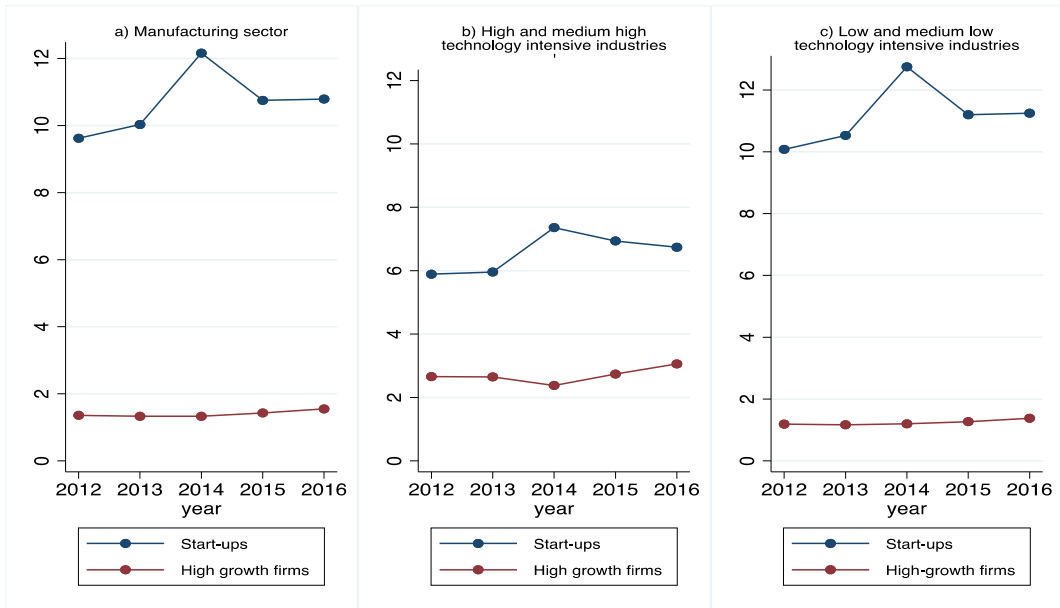
Starting point of empirical investigation is the assessment of appropriateness of our specification. The M2/M1 tests for autocorrelation in dynamic panel estimation suggest the absence of second-order autocorrelation, while the Sargan/Hansen tests for overidentifying restrictions and the difference-in-difference Sargan tests for levels equation confirm the validity of used instruments (contained in Appendix tables). It can be concluded that all relevant diagnostics provide support to our model and enable us to proceed with the interpretation of results.

5.1 The impact of intra-EU-28 trade on the entrepreneurial outcomes

As a starting point of the investigation, we assess the contribution of intra-EU-28 trade to the CEE entrepreneurial outcomes (Fig. 5). Looking at findings for the whole exports and imports, a 1 percentage point increase in the share of EU-28 in CEE exports increases the share of new businesses for about 0.08 percentage points, while the effect on the share of high-growth firms ranges around 0.03 percentage points. Findings on imports are similar to the ones reported above. A 1 percentage point increase in the share of EU-28 in total CEE imports increases the share of entrants in enterprise population for 0.08 percentage point and the share of high-growth firms for about 0.04 percentage points.

The question that arises in the light of the above findings is what type of goods most facilitates the entrepreneurial outcomes? In the production-oriented economies, one would expect to find stronger effects

¹ For detailed description of the database see Online Appendix¹ of the paper.



Source: Eurostat

Fig. 1 Business dynamics in CEE manufacturing industries 2012–2016

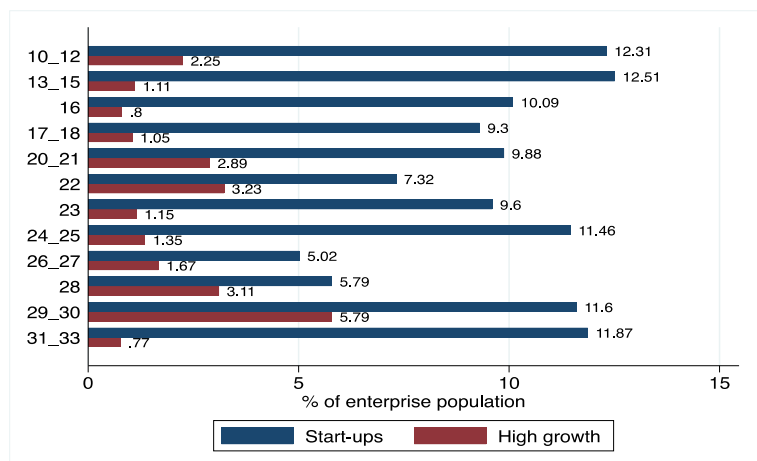
of the imports of intermediate goods over final ones, since the former are being used in the production process. Exports of final goods provide previously mentioned learning and scale effects, which may have beneficial effect on entry and growth of enterprises. Findings from Fig. 5 reveal greater magnitude of exports and imports of the final as opposed to the intermediate goods. Learning by exporting and scale effects of large integrated market such as EU provide opportunities that have somewhat greater effect on the share of entrants and high-growth firms. However, these findings also raise questions about the origin and the destination of

CEE imports and exports and the role played by the integration in European value chains. We address these questions in more detail in next sections.

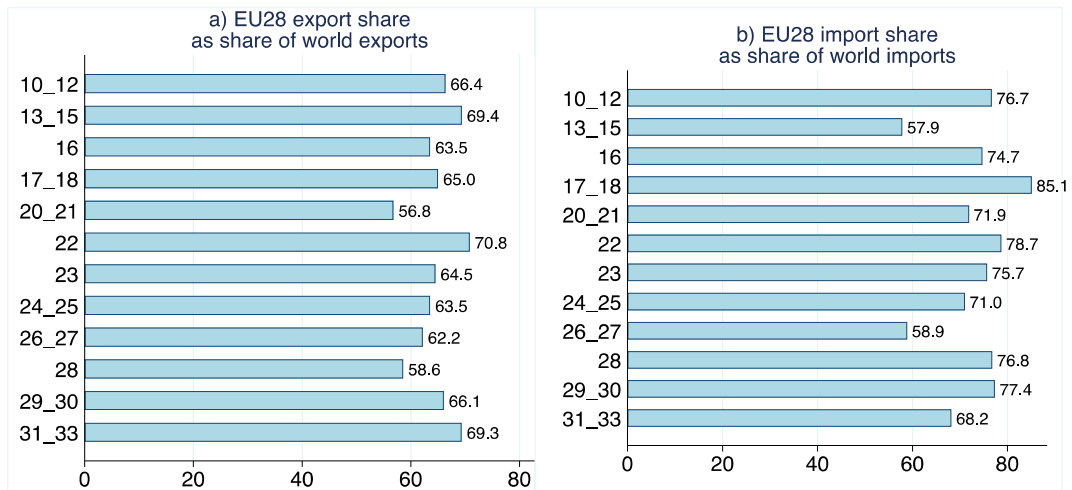
5.2 Trade origin and destination effects

One of the effects of market integration should be a gradual orientation of indigenous producers towards demand within the borders of the single market. However, firms and industries from the less-advanced parts of integration such as CEE may lack required capabilities to meet sophisticated demand of advanced members

Fig. 2 Business dynamics across NACE rev2 manufacturing industries 2012–2016



Source: Eurostat



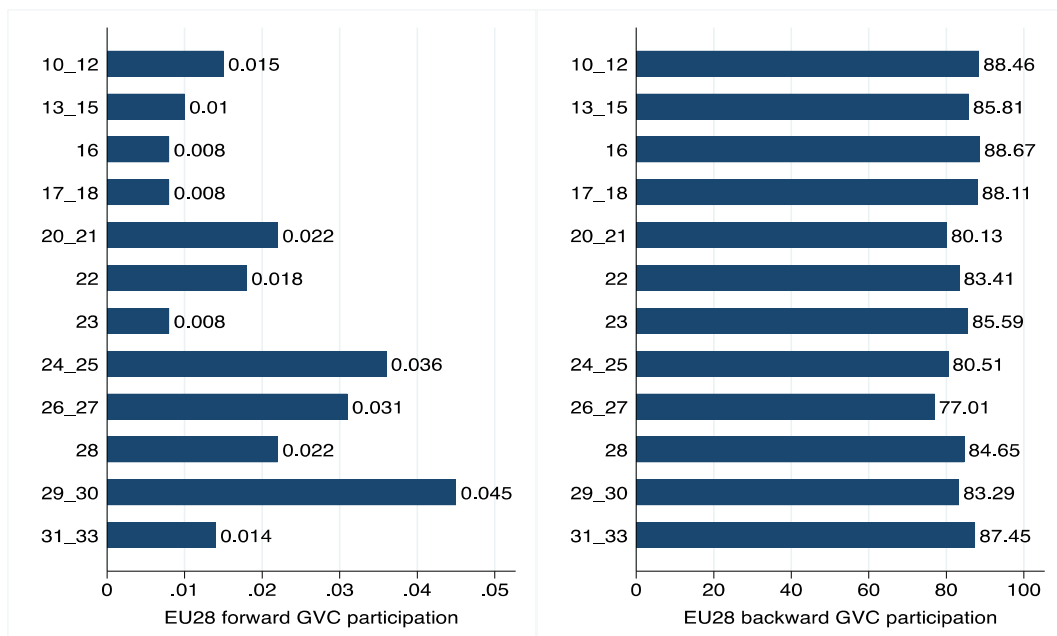
Source: OECD TiVA

Fig. 3 EU-28 share in exports, imports, and foreign demand of CEE manufacturing industries 2012–2016 (in %)

of integration. Even when such barriers can be overcome, firms from less-advanced countries may still face barriers in the form of country of origin effect, i.e. the adverse perception about the quality of own products by their potential users. Inability of integrations to remedy such market failures may motivate some producers to forego potential benefits of integration and focus on

external markets where their products enjoy better reputation.

To explore the existence of such effects, we distinguish between trade flows taking place among CEE and Western European (EU-15) member states and trade flows taking place within a group of new (EU-13) Europe involving CEE countries (Fig. 6). Our findings



Source: OECD TiVA

Fig. 4 Forward and backward participation of CEE manufacturing industries in EU-28 GVC 2012–2016 (average values in %)

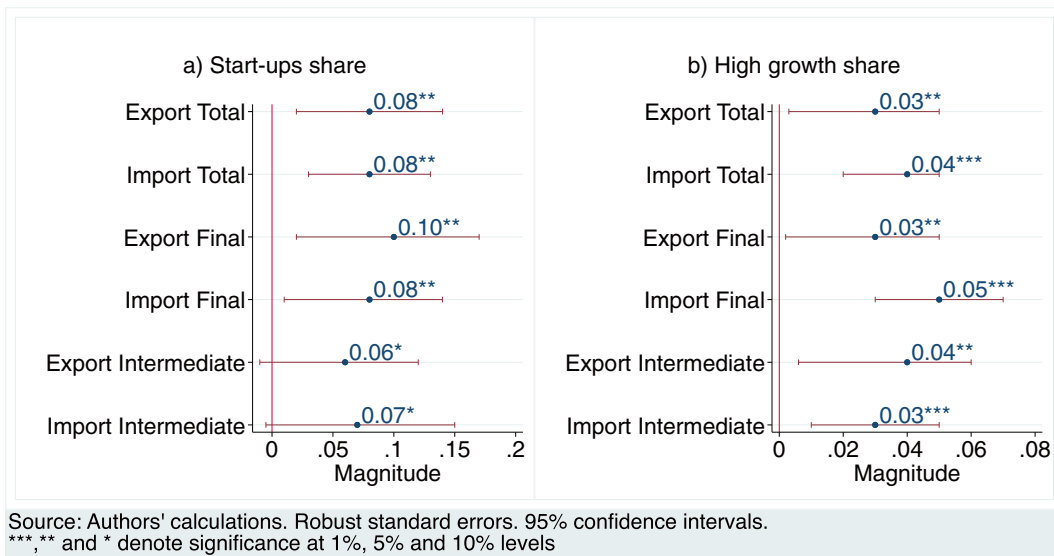


Fig. 5 The impact of EU-28 exports on the entrepreneurial outcomes in CEE manufacturing 2012–2016

reveal that EU-15 market contributes to growth but not to the entry of new firms. Trade between EU-13 countries (CEE region), on the other hand, facilitates the increase in shares of both entrants and high-growth firms through export and (in case of entry) import effects. These findings point to the relevance of local market conditions in less-advanced parts of integration for new business formation. Access to markets of advanced countries, on the other hand, provides knowledge and technology spillovers through learning by exporting that help firms to achieve higher growth rates.

5.3 Participation in European value chains

It was suggested in previous sections that one of the channels for impact of market integration on entrepreneurial outcomes in CEE could be the integration of domestic producers in European value chains. The next part of the analysis introduces measures of backward and forward GVC participation (Fig. 7). The relevance of these channels is supposed to shift as countries climb the development ladder. Less-advanced countries perform standardised cost-competitive activities, such as assembling, that typically bear little own added value, and thus their export embodies considerable portion of foreign value added. As knowledge and technological capabilities of countries increase, the share of domestic value added increases not only in their own exports but also in exports of other countries related through downstream value chain linkages (Lee 2019).

We observe a positive effect of forward GVC participation on firm entry and growth, but only a weakly significant and negative effect of backward GVC participation in two cases. It is evident also that effects of forward participation are unusually high. For example, increase in the share of domestic value added embodied in EU-28 exports by 1 percentage point would, according to our findings, increase the share of entrants by 38 percentage points and the share of high-growth firms by 14 percentage points. Such high magnitude of findings may seem odd at first. However, one should recall that the average share of domestic value added from CEE industries in EU-28 exports (forward GVC measure) is 0.02%, with its median value being 0.008%. Moreover, 90% of our industries have shares of domestic value added in EU exports below 0.05%.

The above not only provides further confirmation of position of CEE producers in low value-added segments of European value chain but also makes our coefficients more understandable. Assuming the unit change at median value, it follows that 1% increase in forward GVC participation would induce 0.038 percentage points higher share of new entrants and 0.014 percentage points increase in the share of high-growth firms. These findings clearly show that upgrading of knowledge and technological capabilities of CEE industries, a precondition for increase in domestic value added, holds a key for advancing of CEE manufacturing up the ladder of global, and particularly EU, value chains.

Our findings also reveal that beneficial forward effects have much stronger roots in the integration in value

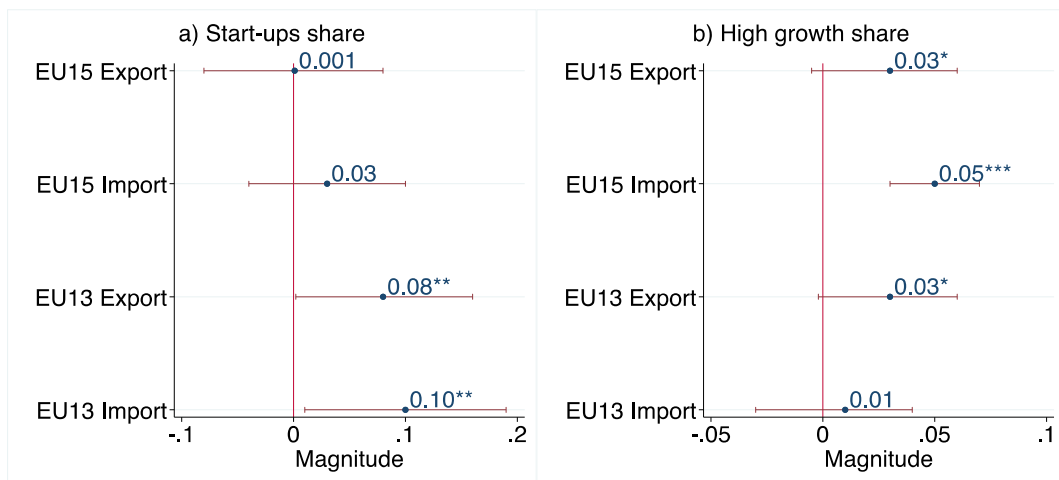


Fig. 6 The impact of EU-15 and EU-13 trade on the entrepreneurial outcomes in CEE manufacturing 2012–2016

chains of producers from advanced EU member states (EU-15). Together, these findings have important implications not only for CEE but also for policy formulation across advancing countries. They show that building of domestic knowledge and technological capabilities coupled with forward integration in value chains of advanced countries produces far stronger effects on business dynamics than backward integration through standardised cost-competitive activities.

5.4 Mediating role of technological intensity

The analysis so far indicates that both trade and GVC integration facilitate entry and growth of CEE firms. The question that further arises is whether these effects are equally distributed across all industries. Empirical

literature in Section 2 argues that high-technology-intensive industries offer greater opportunities for start-ups and high-growth firms. To explore whether technological intensity of industry plays a role in the relationship between market integration and firm entry and growth, we next introduce an interaction between technological intensity and our measures of trade and GVC participation. For convenience of exposition, the results are presented as marginal effects for groups of low- and high-technology-intensive industries.

Figure 8 presents results for EU-28, EU-15, and EU-13 exports and imports' impact on the share of start-ups. We find positive effects on the share of start-ups from increases in both EU export and import shares, and there appears no statistically significant difference between low- and high-technology-intensive industries. Hence, our findings are

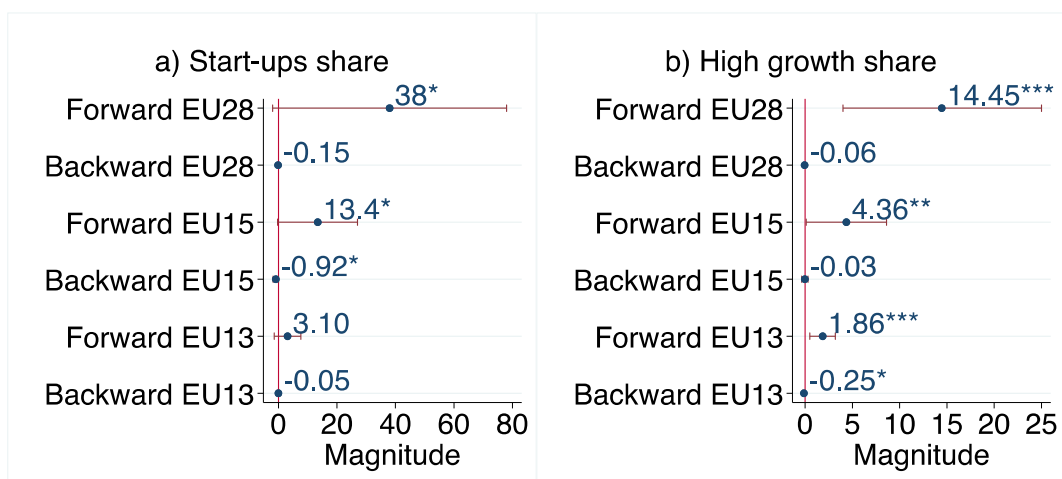


Fig. 7 The impact of GVC participation on the entrepreneurial outcomes in CEE manufacturing 2012–2016

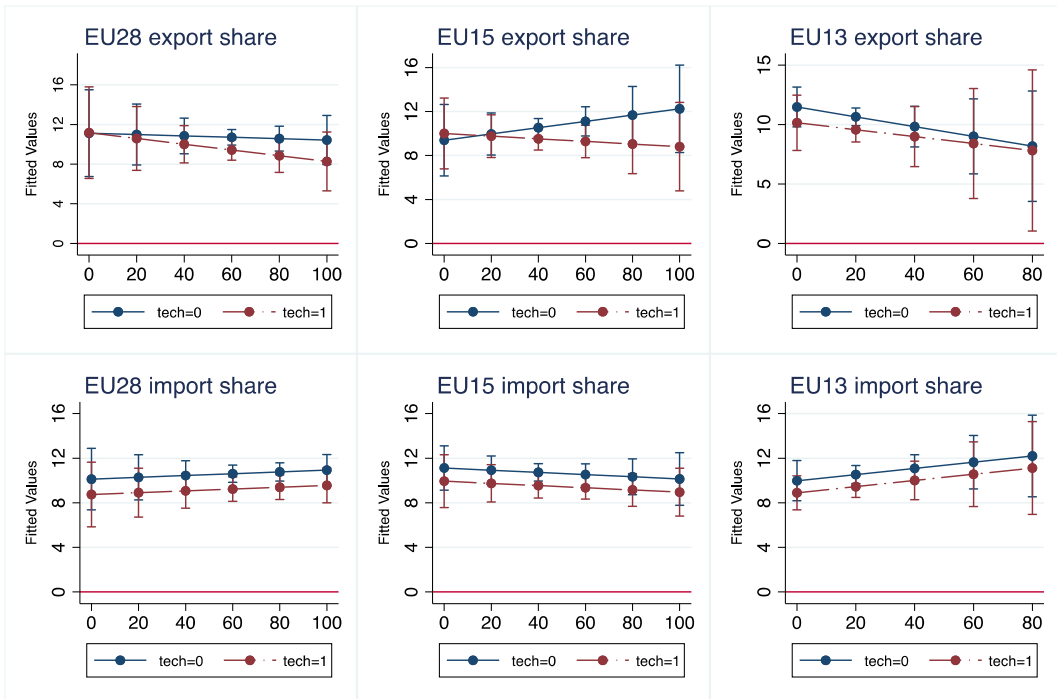


Fig. 8 Mediating effect of technological intensity on start-up share from EU exports and imports

closer to the literature suggesting that technological intensity does not play relevant role in shaping of entrepreneurial

outcomes (Almus and Nerlinger 2000; Hözl 2009; Du and Temouri 2015; Segarra-Blasco et al. 2018).

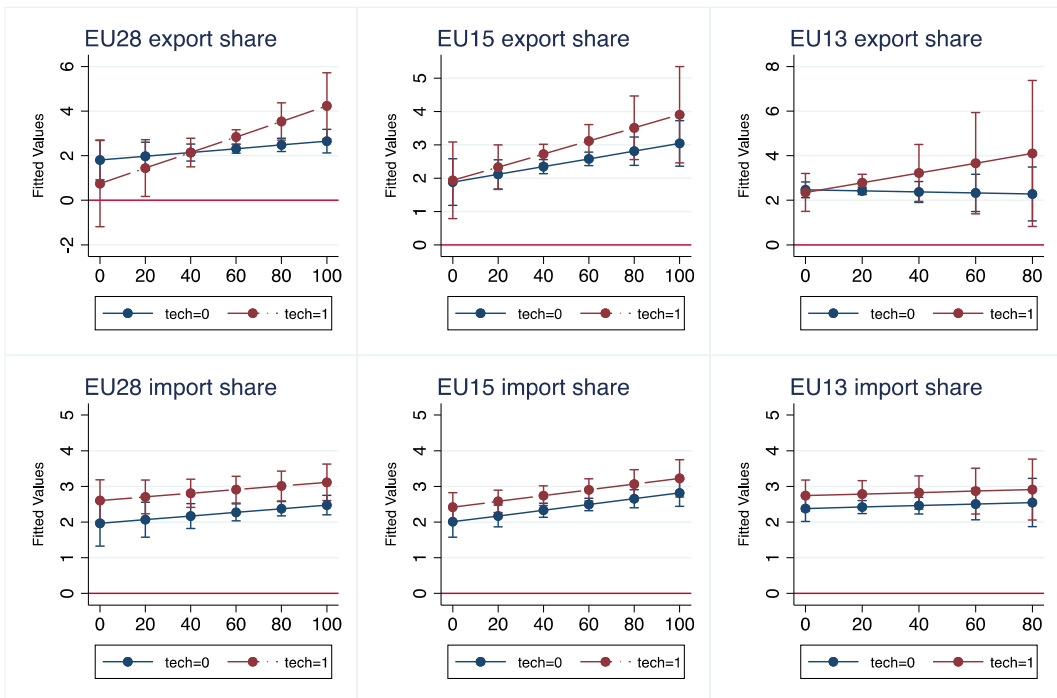


Fig. 9 Mediating effect of technological intensity on high-growth share from EU exports and imports

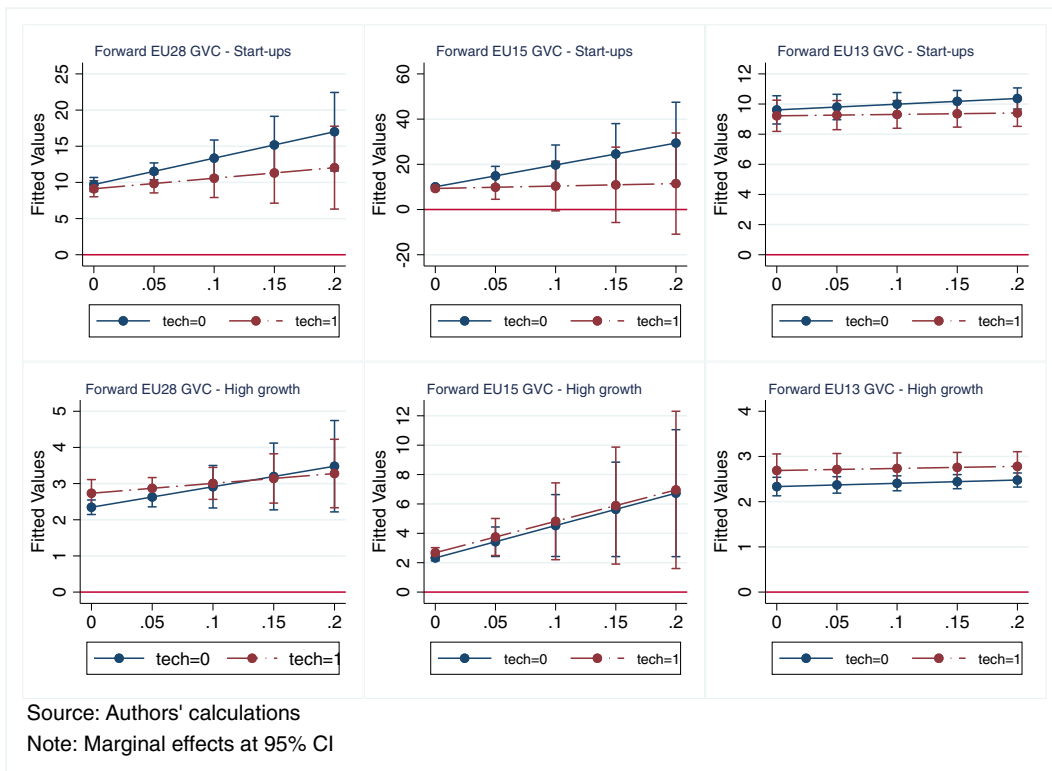


Fig. 10 Mediating effect of technological intensity on firm start-ups and high-growth shares from EU forward GVC participation

Findings with respect to the effects on high-growth firms are in line with the earlier ones (Fig. 9). In all specifications, the difference in the effects of trade on increase in share of high-growth firms is not statistically significant, which suggests that the benefits from trade detected in earlier parts of the analysis are distributed across all subsectors of manufacturing regardless of their technological intensity. Almost identical findings can be observed when one takes into account the effect of technological intensity and forward GVC participation, since in all cases, we do not find statistically significant differences in magnitude of effects between the two groups of industries. In all three groupings of countries, we observe positive effects of forward GVC integration on start-ups and high-growth firms, but the differences between the two groups of industries are not statistically significant (Fig. 10). It appears that advancing up the value chains of industries that formed the basis for the early development of CEE during 1990s and 2000s creates more opportunities for entry.²

² This finding is particularly relevant since our baseline models yielded insignificant coefficient on impact of forward participation in EU-13 value chains on entry share but inclusion of interaction term with technological intensity makes both variables highly statistically significant. Printouts available on request.

The last part of this section pertains to the role of technological intensity in backward GVC participation (Fig. 11). The interaction between technological intensity and backward GVC integration measure makes the latter measure statistically significant. Findings for high-growth firms are significant across all three specifications, but those on start-ups are somewhat different from earlier ones. Effects of backward integration within EU-28 and EU-13 on start-ups seem to work only in industries with deeper backward GVC integration (above 50% of foreign value embodied in domestic gross exports), while the opposite is the case with EU-15 backward integration. It follows that early integration in EU value chains provided CEE firms with scale effects and knowledge and skill advantages that enabled increase in the share of start-ups. However, at higher levels of integration, it is collaboration among firms within new EU member states that creates new business opportunities, while the effects of ‘old’ EU member states become statistically insignificant. Finally, as in previous sections, we do not detect statistically significant differences between industries of different technological intensity.

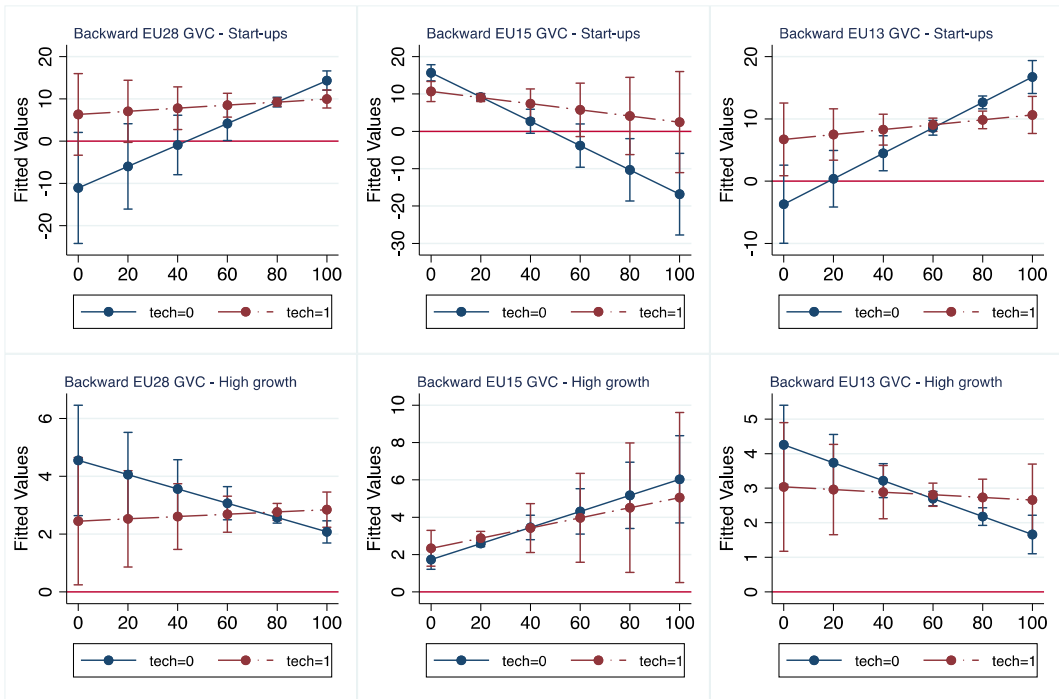


Fig. 11 Mediating effect of technological intensity on firm start-ups and high-growth shares from EU backward GVC participation

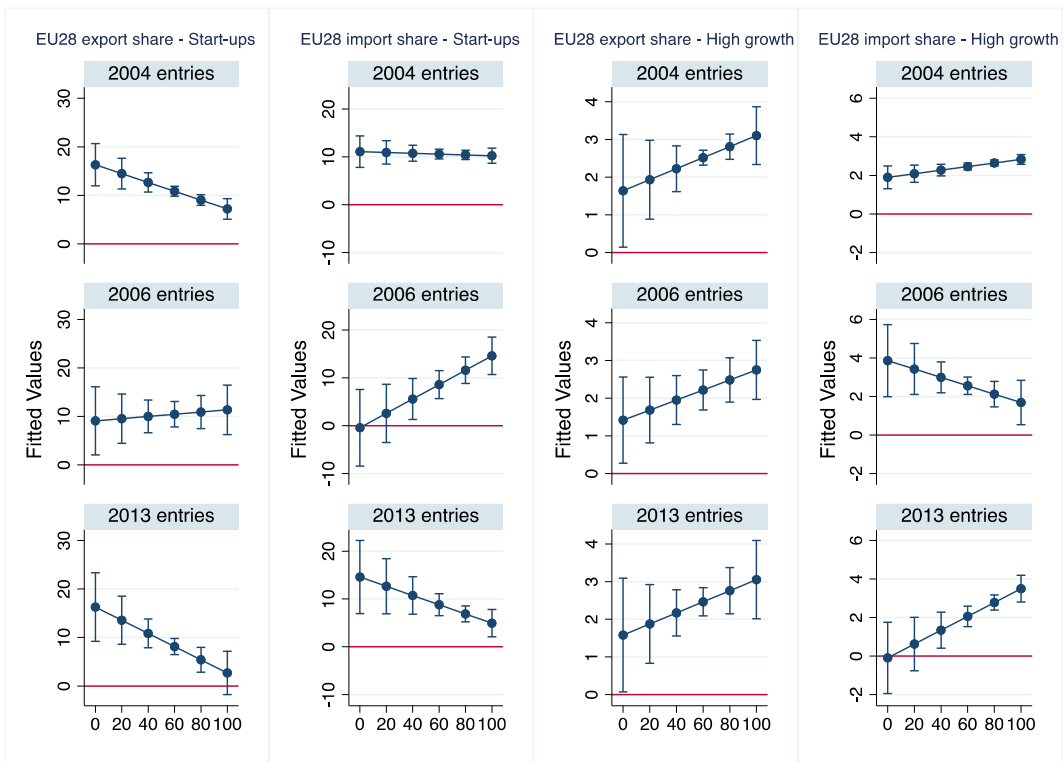


Fig. 12 Timing of entry to the EU effect on firm start-ups and high-growth shares from EU-28 exports and imports

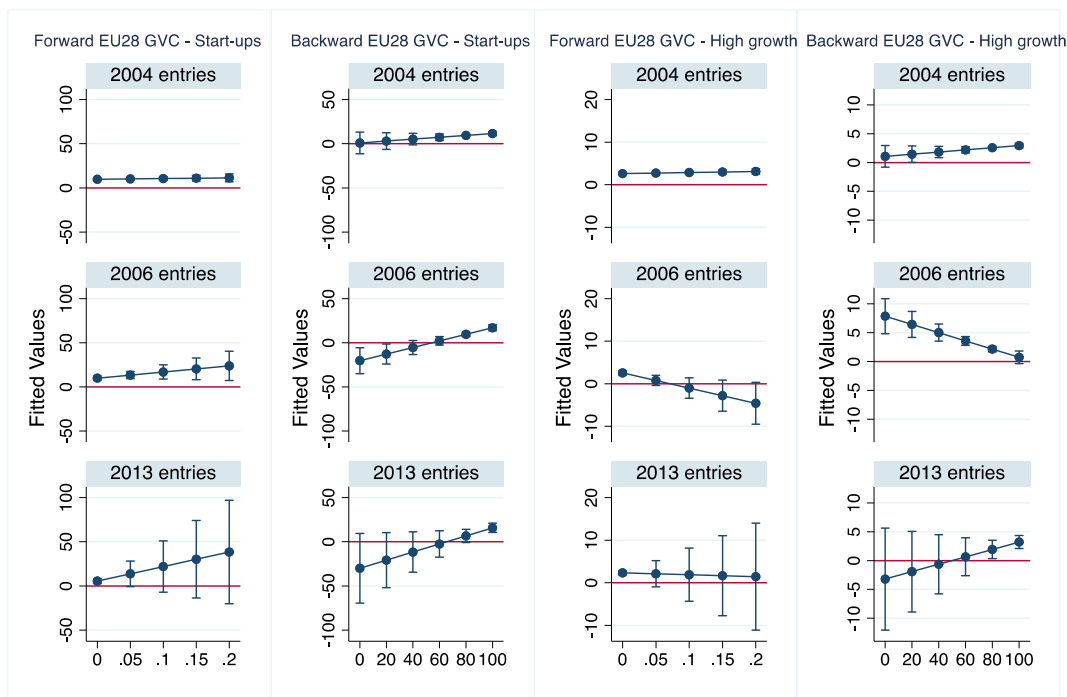


Fig. 13 Timing of entry to EU effect on firm start-ups and high-growth shares from forward and backward GVC participation

5.5 Timing of entry effect

Discussions of previous sections have indicated that benefits from intra-EU trade and GVC participation may not be evenly distributed among economies that entered integration at different points in time. Early entrants may have the first mover advantages for integration in production networks with other members of integration and in the penetration of other members' markets. Finally, early access provides initial advantage in terms of knowledge and technology spillovers for indigenous economy. It can be thus expected that gains from integration be more directed towards industries in countries that were first to enter EU. To explore this issue, we next look into the mediating effects of timing of EU admission on firm entry and growth shares. For this reason, dummy variables for groups of countries (Visegrad and Baltic countries) are replaced with dummy variables controlling for three groups of countries, group of countries that joined the EU in 2004, Bulgaria and Romania that joined the EU in 2006 and Croatia whose admission took place only in 2013. These are then interacted with our key variables of interest.

Figure 12 presents marginal effects derived from estimations with timing of entry interaction effects for EU-28 exports and imports. We find positive effects from both

exports and imports on shares of start-ups and high-growth firms in all three groups of CEE countries. We next turn to findings on the impact of timing of entry and forward and backward participation in European value chains (Fig. 13). In the 2004 cohort of CEE countries, we find positive and increasing effects from both GVC integration channels on shares of start-ups and high-growth firms. Forward integration seems to be important for 2006 cohort's start-ups, while backward integration appears relevant for high-growth firms at low levels of integration and for start-ups in industries deeply integrated in EU-28 GVCs. Finally, no statistically significant effects were found in the 2013 cohort (Croatia, the last country to join the EU). Such finding signals that firstcomers were ones to pick most of the gains from the EU GVC integration.

To conclude this section, a reflection must be made on our research hypotheses. There is strong support for the positive impact of exports (H1a) and imports (H1b) as well as forward GVC participation (H2a), but the coefficients on backward GVC integration measures were insignificant, thus lacking enough evidence to confirm H2b. Support is also found in H3, as the effects of trade and GVC integration are found in both low- and high-technology-intensive industries. Our findings confirm that H4 as evidence is found of influence from trade linkages and GVC integration involving both new and

old EU member states. Finally, trade effects seem to be the only relevant channel for latecomers in the EU integrations process, whereby H5 is only partially confirmed.

6 Conclusion

The integration of various kinds of cultures, beliefs, and ways of living in one political and economic entity is not an easy task. Nevertheless, this very process started in Europe since the establishment of the European Coal and Steel Community that has evolved into an unprecedented covenant known as the European Union. Since the 1950s, the evolution of this integration was gradual, and it included harmonisation of regulations and standards that brought the reductions in trading costs. This was accompanied by the several waves of EU enlargement towards Baltics and CEE countries. Until recently, this process was considered as a one-way street. However, populists across the world and the EU challenge views that political and economic integration and cooperation bring benefits to all participants.

This paper explores whether and in which way intra-EU trade of eleven CEE member states and integration of their manufacturing industries in EU forward and backward value chains influence the formation of new businesses and creation of high-growth firms. Our results indicate that there are positive effects of intra-EU imports and exports on a share of new firms and on the share of high-growth firms in the total population of enterprises across manufacturing sectors of all technological intensities. Differentiation of trade in final goods and trade in intermediates leads us to the conclusion that the effects of exports of final goods are stronger than intermediate goods, but in the case of imports, the intermediate goods' effects outweigh ones in the final goods. Moreover, it seems that trade with advanced EU member states is responsible for transformation of firms into high-growth entities, while trade and GVC linkages within CEE increase the share of start-ups.

The analysis of the inclusion of CEE countries in a forward GVC revealed a positive effect of forward GVC participation on the firm's entry and growth. This finding challenges policies pursued by CEE countries over the past decades, as the integration of CEE into EU value chains mainly took part through backward channel of foreign value added embodied in domestic exports. It also shows that future policies should find a way

to build indigenous competences and capabilities that would result in greater share of indigenous CEE value added embodied in goods produced by advanced countries. Such effects require building of indigenous innovation competences and capabilities in which CEE are the least developed part of the EU.

The mediating effect of technological intensity on the relationship between trade and GVC integration and the shares of entrants and high-growth firms was also examined. The results revealed a lack of statistically significant difference between these two groups. This finding serves as additional evidence that the ability to participate on international market provides beneficial effects for domestic economy. The paper also reveals the existence of the first mover advantages in terms of trade and GVC integration benefits. It seems that those countries that were among the first to join the EU were able to reap stronger benefits through these channels. Several times stronger effects of forward GVC participation suggest that business dynamics in former countries are more responsive to building of competences and capabilities relevant for competition in sophisticated segment of market and thus challenge conventional industrial policies in CEE.

Overall, our findings can serve as a starting point for policymakers who must make decisions about useful incentives to support trade, entrepreneurship, and competitiveness of the indigenous economy. The political choice to join an association like the EU, according to our research results, yields benefits through both trade and GVC integration channels for entrants and high-growth firms, but the timing of entry should not be neglected. Clearly articulated and scientifically proven benefits of EU integrations that we offer within this paper can motivate other candidate countries to enhance the velocity of pre-accession processes in order to meet the requirements as soon as possible.

In the academic sense, the contribution of this research is twofold. Firstly, this paper offers a novel perspective on gains from market integration that is focused on entrepreneurial outcomes, and with that approach, we manage to bring together the trade and entrepreneurship literature. Secondly, the existing literature about the impact of economic integrations on new business formation and growth is very scarce, and to the best of our knowledge, there are no studies dealing with the impact of intra-EU trade and GVC integration on entrepreneurial outcomes. With this paper, we are trying to fulfil that gap.

At the end of this study, we underline a few limitations that could be addressed in future research. The first limitation is related to the time period included in this study. Due to the availability of the data, we conducted the panel analysis for the time period 2011–2016. For future research, it would be interesting to see whether the longer time period with more observations will influence the results. Also, our analysis relied on relatively aggregated industries due to another data limitation. Availability of more disaggregated datasets should enable analyses at more detailed levels. Our analysis was limited to the effects on a firm's entry and growth. Lack of data prevented us to explore the existence of similar effects on a firm's survival, a task that future research should address. Finally, future of these countries shall depend on their innovation capabilities, whereas future studies should reflect on the role of intra-EU trade and GVC integration on the creation and commercialization of innovations in CEE economies.

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