Economics
The Open-Access, Open-Assessment E-Journal

Vol. 13, 2019-53 | December 17, 2019 | http://dx.doi.org/10.5018/economics-ejournal.ja.2019-53

Export activity, innovation and institutions in Southern European nascent entrepreneurship

Helena Marques

Abstract
This paper studies the role of personal characteristics, perceptual variables and country-level conditioning (financial environment, government quality and support, education quality and entrepreneurship know-how, innovation environment and support, business infrastructure, entrepreneurial culture and society, and gender roles) in explaining the export propensity and intensity of nascent entrepreneurs in four Southern European countries (Portugal, Spain, Italy and Greece), using Total Early-stage Entrepreneurial Activity (TEA) data from the Global Entrepreneurship Monitor (GEM) dataset in 2003–2010. Due to the nascent nature of the business, export activity is starting or about to start at the time of the survey and, for that reason, it cannot be studied using theoretical frameworks based on productivity heterogeneity, which has not yet been measured. In this sample of nascent businesses, there is no evidence of a selection effect into exporting and the individual-level factors influencing export propensity and intensity are identical. The most relevant individual-level variables facilitating export activity are new products, new technology, graduate education, and entrepreneurship networks. The most relevant country-level factors facilitating export activity are the availability of funding, the national government's macroeconomic support, and the support for new technology.

JEL F14 J24 L26 O43
Keywords Entrepreneurship; exporting; innovation; institutions; Southern Europe

Authors
Helena Marques, University of the Balearic Islands, Palma de Mallorca, Spain, helena.ferreira-marques@uib.es

Citation Helena Marques (2019). Export activity, innovation and institutions in Southern European nascent entrepreneurship. *Economics: The Open-Access, Open-Assessment E-Journal*, 13 (2019-53): 1–48.
http://dx.doi.org/10.5018/economics- ejournal.ja.2019-53

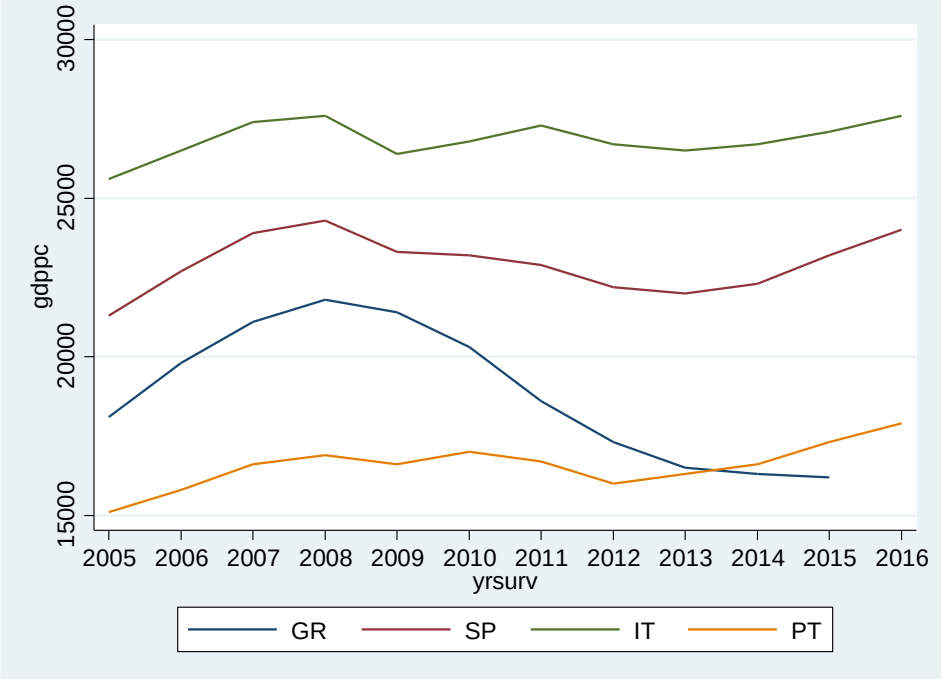
Received July 30, 2019 **Published as Economics Discussion Paper** August 19, 2019
Revised December 7, 2019 **Accepted** December 11, 2019 **Published** December 17, 2019

1 Introduction

A great deal of entrepreneurship research has found a strong relationship between entrepreneurship and economic growth. This issue is particularly relevant for four Southern European countries (Portugal, Spain, Italy and Greece), henceforth SE4, to the extent that the formation of new businesses before the Great Recession of 2008–09 may have facilitated economic recovery in those countries in the post-recession period (McGaughey et al., 2016; Bojica and Fuentes, 2012). Moreover, there likely are important synergies between opportunity-based entrepreneurship, higher levels of education of the entrepreneurs, an export orientation and high-growth businesses (Lecuna et al., 2017). Besides, technological capabilities and international collaborative linkages may increase exports (Leiblein and Reuer, 2004).

The SE4 countries share similarities in economic structure, largely based on traditional manufacturing (see Puig and Marques (2010) for a review in the European context), in long-term cultural and institutional characteristics (Tabellini, 2010) and in the behavior of economic aggregates since the 1990s (Gopinath et al., 2017). In 2005–2015, their income per capita diminished relatively to the EU-28 average. According to Eurostat data at Purchasing Power Standards, in 2005 Spain and Italy were situated roughly at the EU-28 average, followed by Greece and Portugal, at respectively 93% and 82% of the EU-28 average. One decade later, in 2015 Spain and Italy were respectively at 90% and 96% of the EU-28 average, with Portugal at 77% and Greece at 68% of the EU-28 average. In absolute terms, as shown in Figure 1, once the Great Recession of 2009–2013 was overcome, it is possible to observe an improvement in GDP per capita, except for Greece.

Figure 1: Evolution of GDP per capita in current price Euros by country (2005–2016)



Source: Eurostat (2017)

At least for Spain and Portugal, economic recovery after 2013 has relied to a great extent on its export capacity (Puig et al., 2014; Groizard and Marques, 2015; Figueira, 2017). However, the SE4 countries tend to show relatively low productivity and low productivity growth, associated to an excessive reliance on low value-added SMEs, with the few competitive firms that are well integrated in global value chains being too few to bear an effect on the aggregate (Gopinath et al., 2017; Nogueira and Inácio, 2017; Pinheiro Alves, 2017). Although firm productivity does not seem to be a deterrent of entry into foreign markets, this entry happens at relatively low-quality levels partly due to lack of R&D investment associated to a relatively low education level of the workforce and a generalized misallocation of resources translated into a tradition of industry protection and state-owned firms (Gopinath et al., 2017; Nogueira and Inácio, 2017; Pinheiro Alves, 2017). The consequence is low competitive pressure and thus the incentive to innovate in the internal market is weak (Pinheiro Alves, 2017). However, well-targeted policy initiatives may improve start-up rates (Verheul et al., 2009).

This paper studies the role of personal characteristics, perceptual variables and country-level conditioning (financial environment, government quality and support, education quality and entrepreneurship know-how, innovation environment and support, business infrastructure, entrepreneurial culture and society, and gender roles) in explaining the export propensity and intensity of nascent entrepreneurs in SE4 countries. This is done using Total Early-stage Entrepreneurial Activity (TEA) data from the Global Entrepreneurship Monitor (GEM) dataset for the 2003–2010 period, which has been widely used in entrepreneurship research, namely to study the role of entrepreneurship in fostering economic growth (Reynolds et al., 2005; Levie and Autio, 2008; Alvarez et al., 2014), as well as between entrepreneurship and innovation (Bosma et al., 2012).[1]

This paper makes use of the two components of the GEM dataset: individual-level variables from the Adult Population Surveys (APS) and country-level variables from the National Experts Surveys (NES), which include the Entrepreneurial Framework Conditions (EFCs) of the GEM model (Reynolds et al., 2005; Levie and Autio, 2008). The APS provides information on product and process innovation, the education level of the entrepreneur, and business size in terms of jobs. In turn, the use of the NES allows an identification of those country-level factors which are most relevant for the export activity of nascent entrepreneurs in the SE4 countries, ultimately pointing out which policies may facilitate or hinder the export activity of nascent entrepreneurs in those countries.

The microdata results provided in this paper show that to offer an innovative product, or to use an innovative technology, is very significantly associated to exporting. As a consequence, even if the incentive to innovate is weak in the internal market it may be much stronger in export markets, because in small open economies innovation and internationalization are

[1]Full information on the GEM database is freely available at http://www.gemconsortium.org. For more technical issues see Bosma et al. (2012). There are other databases that allow studying the relationship between technological innovations and both export participation and export intensity, such as the Community Innovation Survey, the World Bank Enterprise Survey, EFIGE and ESEE. Whilst some are panels, others are limited to only one or a few countries, and in all cases they focus on existing firms. On the contrary, GEM is available for a large number of countries, with international comparability, it contains policy variables in the same topics as the individual-level variables, and it focuses on nascent entrepreneurs. The drawback is that it integrates cross-sectional cohorts of nascent entrepreneurs and for this reason it cannot be a panel.

complementary strategies (Kylaheiko et al., 2011). Moreover, nascent entrepreneurs may be more prone to innovation, despite high failure rates, as typically their profile is younger and more educated than the average incumbent entrepreneur (Marques et al., 2015). The education level of the entrepreneur is partly mediated by innovation variables, in accordance to the double view of education as both providing knowledge and signaling ability. In what concerns size variables, the current number of jobs is never significant and the entrepreneur's expectations for job growth within five years lose significance when product and technology innovation are considered.

Section 2 provides a review of related research that forms an explanatory framework. Section 3 describes the data and explains the methodology used. Section 4 presents the regression results for individual-level variables and country-level factors. Section 5 presents several robustness checks on the section 4 individual-level results for export intensity. Finally, Section 6 concludes and suggests some policy implications.

2 Related research and explanatory framework

One of the first observations made by international trade researchers regarding firm-level exports was that not all firms export. In the wake of this finding, a strand of research arose that was dedicated to explaining why not all firms export (Bernard and Jensen (2004) for the United States, Roberts and Tybout (1997) for Colombia, Aitken et al. (1997) for Mexico, Clerides et al. (1998) for Colombia, Mexico and Morocco). Following this empirical work, the theoretical heterogeneous firms' literature initiated by Melitz (2003) for incumbent firms stated that, with fixed costs of exporting, the decision to export is primarily dependent on the firm's productivity and in turn the firm's productivity level is correlated to its size. However, once a firm became an exporter, the share of sales destined to a foreign market would be primarily dependent upon the variable costs it might face in that market (Manova, 2013). As a consequence, productivity is not expected to play a role in determining positive export intensity (intensive margin), but it is expected to be the main determinant of export propensity (extensive margin).

More recently, Grossman et al. (2017) argue that productivity depends on the ability of manager and workers, and Dinopoulos and Unel (2017) explain that high-ability entrepreneurs invest in managerial capital, increasing firm productivity that leads to exporting. Since more able people are more likely to innovate, these theoretical arguments are captured by innovation variables and individual characteristics related to ability, such as the education level. Recent empirical work has been finding that managerial characteristics as well as product and process innovation are major sources of productivity and by extension of export activity (Castellani and Zanfei, 2007; Cassiman et al., 2010; Monréal-Pérez et al., 2012; Máñez et al., 2015; Fernández-Mesa and Alegre, 2015; Görg and Hanley, 2017; Mohavedi et al., 2017).

Besides the supply argument linked to a higher productivity derived from innovation, the latter can also be seen as promoting exporting from a demand-side argument, through the higher competitiveness products can achieve in foreign markets though innovation (Rodil et al., 2016). This transmission channel may be observed through product upgrading (Caldera, 2010) or a combination of product, process and marketing innovations (Lewandowska et al., 2016).

Moreover, the international economics literature has studied the direction of causality between innovation and exports, finding a clear and strong association between the two variables (Clerides et al., 1998; Helpman, 2006; Greenaway and Kneller, 2007; Bernard et al., 2012; Melitz and Redding, 2012; Silva et al., 2013). Van Beveren and Vandenbussche (2010) find that innovation makes firms more likely to start exporting. In this way, there is support for seeing innovation as exogenous with respect to exporting.

The studies cited above that link exporting and innovation all deal with established firms and thus are able to link innovation to productivity and from there to exporting. However, none of them deals with nascent entrepreneurs, which is what this paper does, using the GEM database. The definition of nascent entrepreneur in the GEM database is that of an individual carrying out Total Early-Stage Entrepreneurial Activity (TEA). This definition pools the start-ups (SU), involved in setting up a business in the 12 months preceding the survey, and the owners-managers (OM), who owned and managed a business started less than 3.5 years prior to the survey. The SU group answers the survey question: "What proportion of your customers will normally live outside the country?" The OM group answers the survey question: "What proportion of your customers normally live outside the country?". Due to the nascent nature of the business, export activity is starting or about to start at the time of the survey. For that reason, it cannot be studied using theoretical frameworks based on productivity heterogeneity, which has not yet been measured. Thus, in the context of nascent businesses, the study of export activity means asking which factors hinder or facilitate the willingness to export and the development of the export activity. In businesses that strive to be successful in a globalized world, the decision to export and by how much may be confounded with the decision to start the business itself.

In this context, the research benchmark is the GEM model, which has been established to form the basis of the research on the relationship between entrepreneurship and growth (Reynolds et al., 2005; Levie and Autio, 2008; Alvarez et al., 2014), as well as between entrepreneurship and innovation (Bosma et al., 2012). The transmission channels of that relationship include: (i) objective factors, such as personal socio-economic characteristics of the entrepreneur (gender, age, prior work status, education and income levels); (ii) subjective factors related to the entrepreneur's attitudes, motives and perceptions; (iii) and national institutions and social values having a strong direct effect on entrepreneurship by providing a normative and institutional context.

The development of the GEM database originated a great deal of research (see reviews in Arenius and Minitti (2005), van der Sluis et al. (2008), Alvarez et al. (2014), Bergmann et al. (2014)). Van Stel et al. (2005) and Hessels and van Stel (2011) found that the contribution of TEA to economic growth, moreover if it is export-oriented, is stronger in high-income countries, possibly because these have higher levels of human capital. Bogenhold et al. (2014)[2] focus on the so-called professions and, using the results of a survey distributed in Finland in 2006, present evidence that those professionals have very specific personal characteristics (89% worked alone, 71% were women and 72% held a university degree).

[2] Bogenhold et al. (2014) discuss self-employment, which implies a deliberate decision to start an activity but applies to those working alone. Entrepreneurship may include self-employment, but it also refers to businesses that employ workers in addition to the entrepreneur.

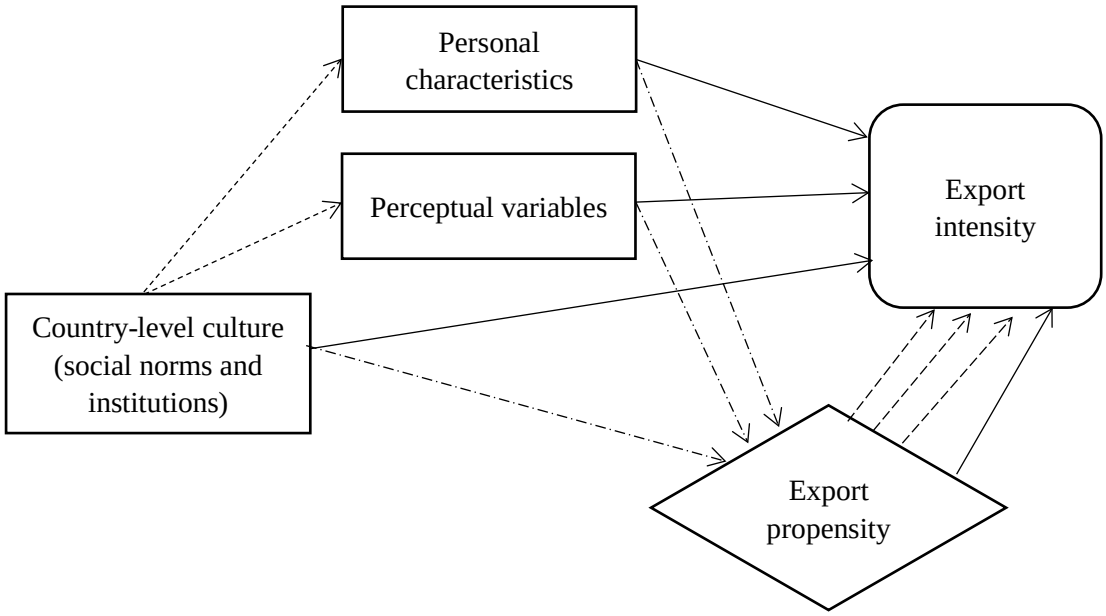
Moreover, individuals with similar socio-economic status are differently influenced by perceptual variables such as knowing other entrepreneurs, alertness to opportunities, fear of failure, confidence about one's own skills (Arenius and Minitti, 2005; Koellinger et al., 2013) and motives labelled as necessity (Bogenhold et al., 2014) and opportunity-seeking (Block et al., 2015). Whereas opportunity-seeking entrepreneurship is innovative and carried out by individuals who are employees or students, necessity-based entrepreneurship is defined as more incremental or imitative and it is typically carried out by individuals who are unemployed (Acs et al., 2008). Bogenhold et al. (2014) present evidence that Finnish professionals choosing to be self-employed have mostly opportunity-seeking motivations. Block et al. (2015) focus on necessity entrepreneurship and conclude from a survey given to German nascent entrepreneurs in 2008 that this motive is linked to pursuing a low-cost price strategy, having a lower education level, and being present in more labour-intensive sectors.

At the country-level, macroeconomic characteristics such as GDP per capita and the business cycle have been considered an influence on the entrepreneurship decision, together with institutions and policies (see the summary provided by Levie et al., 2014). The importance of institutions in shaping different entrepreneurship choices has been examined by Acs et al. (2008) and Herrmann (2010), whilst the importance of inherited values and institutions in shaping individual decisions is discussed at length in Guiso et al. (2006), Liñán and Fernandez-Serrano (2014), and Urbano and Alvarez (2014). Some of the more recent empirical entrepreneurship research has combined individual-level GEM data with country-level data from various other sources and focused on the role of country-level variables such as intellectual property protection (Autio and Acs, 2010), regulatory framework (Ardagna and Lusardi, 2008) and national institutions (van Stel et al., 2005; Levie and Autio, 2008; Liñán and Fernandez-Serrano, 2014; Urbano and Alvarez, 2014).

The proposed model of export activity in entrepreneurship is summarized in Figure 2. There are three groups of covariates that influence the choice between exporting or not (export propensity), and by how much (export intensity): personal characteristics of the entrepreneur, perceptual variables, and country-level culture (institutions and social norms). These variables are listed in Table A1 (personal characteristics and perceptual variables) and in Table A4 (country-level factors). As shown in Figure 2, country-level culture has both a direct and an indirect effect because it also influences personal characteristics and perceptions. In turn, export propensity may mediate the effects of these covariates on export intensity if the characteristics of entrepreneurs who export are significantly different from those of the population. However, if nascent businesses are set-up with a view to exporting (born to export), the entrepreneurs who want to export may be the actual population of entrepreneurs, and then there may be no mediation through the propensity to export. As a consequence, both export propensity and intensity are determined by the direct effects of the covariates and the two models become the same.

Indeed, the export intensity and export propensity models are identical for the SE4 sample used in this paper. In this way, as will be seen, job growth, the existence of a new product or a new technology, the number of owners of the business, a graduate education level, and knowing

Figure 2: Model of export activity in entrepreneurship



Source: Author's own construction

other nascent entrepreneurs, are individual-level factors that increase the probability of exporting as well as its intensity. The existence of a new product or a new technology makes a business different from its competitors and thus it is more competitive in foreign markets. A graduate education level provides the entrepreneur with more knowledge, know-how and skill, which may be required in foreign markets. The number of owners of the business provides it with a pool of knowledge, know-how and skill, as well as more financial resources, allowing for venturing into foreign markets. Knowing other nascent entrepreneurs may have similar advantages, in addition to providing a role-model to newcomers. The psychological process of the entrepreneur is described in detail in Marques (2017b).

3 Data and methodology

This paper uses a subsample extracted from the GEM database (APS for individual-level data and NES for country-level data) for the SE4 group of four Southern European countries (Portugal, Spain, Italy and Greece) in the period 2003–2010. The sample composition is conditioned by sample size differences by year, from a minimum of 2.62% of the observations in 2003 to a maximum of 18.76% of the observations in 2006, and by country, with 83% of observations for Spain, 11% for Greece, 4% for Italy and 2% for Portugal (Table A15). This sample bias causes Italy and Portugal to be underrepresented, given their relative economic size. For this reason, the regression results in section 4 are presented first for individual-level variables only, and then those models are extended to include country-level factors. This

strategy implies that entrepreneurs in SE4 countries share common individual characteristics and thus they can be pooled together for analysis, whilst controlling for characteristics that are specific to each country by means of country fixed effects.

The definition of nascent entrepreneur in the GEM database is that of an individual carrying out Total Early-Stage Entrepreneurial Activity (TEA). This definition pools the start-ups (SU), involved in setting up a business in the 12 months preceding the survey, and the owners-managers (OM), who owned and managed a business started less than 3.5 years prior to the survey. Therefore, the entrepreneurs surveyed are individuals who carried out their activity, including the setting-up process, in the period 2000–2010. There is a maximum of 7,463 individual observations, each corresponding to a nascent entrepreneur, although due to missing values the number of observations diminishes as covariates are included in the regressions. All individual-level variables are described in Table A1, with descriptive statistics provided in TableA2 and the association between individual-level covariates shown in Table A3. Information relative to country-level factors is provided on Tables A4–A5.

The dependent variables are export intensity and export propensity. In the APS database, export intensity is a categorical variable for the percentage of customers abroad with categories given by intervals (None; 1–10%; 11–25%; 26–50%; 51–75%; 76–90%; over 90%). From export intensity it is possible to construct a binary variable for export propensity taking None as the reference group and making all other categories equal to one. The nature of the dependent variables conditions the methodology that can be used. The regression models for export propensity and for export intensity may be related by means of a second stage ordered probit for positive export intensity with a Heckman selection correction estimated as a first stage binary probit for export propensity (see De Luca and Perotti, 2011).[3] However, in this sample, the correlation between the errors of the two equations is not significant, so the selection model is not required.[4] Therefore, the export intensity and propensity models are estimated separately, with the former being estimated as ordered logit, and the latter being estimated as a binary logit. In interpreting the results from the export intensity estimation, it is necessary to take into account that the dependent variable, as given in the survey data, is an ordered ranking and no cardinal meaning can be attributed to it in terms of regression. By conducting the export intensity and propensity regressions separately, the same set of covariates can be used in both cases, thus minimizing the conditioning in the choice of covariates and the problems of perfect prediction in the export propensity model due to the existence of missing values.

---

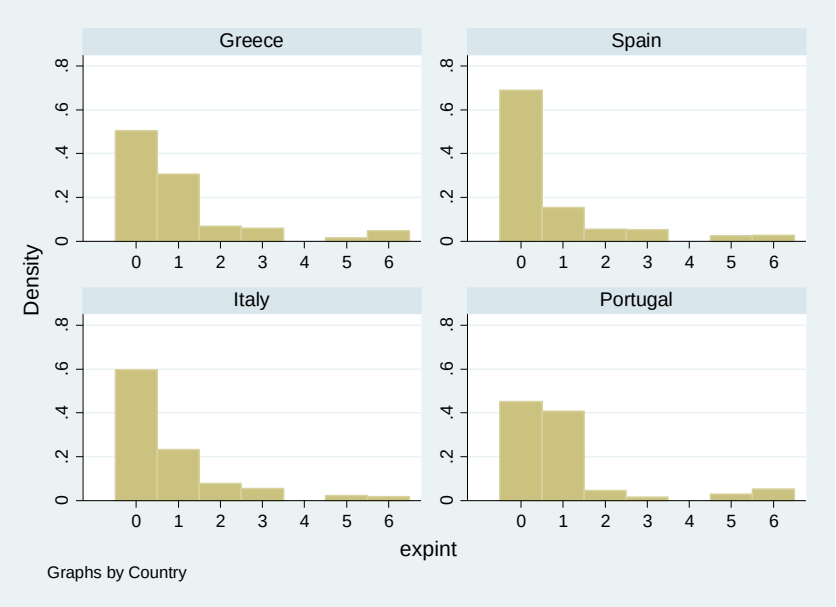
[3] The Heckman selection correction proposed by DeLuca and Perotti (2011) has been estimated in STATA using the command *heckoprobit*.

[4] Nevertheless, some interesting additional results are that in the second equation for positive export intensity, the significant covariates are the number of owners of the business and being motivated by increasing income. Notably, there are no gender differences in either export propensity or positive export intensity when the two-step selection model is used. Due to collinearity, country, industry and year fixed effects have to be included in either the main equation or in the selection equation. When including them in the main equation, having new technology, the level of competition and the entrepreneur's education level were relevant selection variables (as well as knowing other entrepreneurs and being motivated by maintaining income, although these two variables do not produce a valid selection model, that is, the F-test is not significant). If instead fixed effects are included in the selection equation, being motivated by maintaining income is the only relevant selection variable, producing a valid model (significant F-test). These results do not, therefore, contradict the main results presented in the paper.

Both models are estimated with survey weights that match the gender-age distribution of the adult population in the 18–64 age range in each sample country-year pair. Hence, the group of survey-weighted individual observations pertaining to each country-year cell is representative of the working-age population in that cell (Levie and Autio, 2008; Levie et al., 2014). This allows the pooling of observations across countries and years, taking into account unobserved heterogeneity by means of country, industry and year fixed effects. Country-year fixed effects are included whenever possible in order to capture the diverse macroeconomic evolution of the SE4 countries shown in Figure 1.

With respect to nascent entrepreneurship, Portugal is the most export-oriented (54.8% of the sample businesses export) and Spain is the least export-oriented (31.2% of the sample businesses export).[5] The distribution of the export intensity categories by country is shown in Figure 3 and it significantly differs across the SE4 countries (Pearson Chi2 = 219, p-value = 0.000). It can be observed that the distribution of export intensity categories has the fattest tails in the case of Portugal, given that this country not only has the largest share of nascent businesses exporting not more than 10% of their total sales, but it also has the largest share of nascent businesses exporting over 75% of their total sales. For the whole SE4 group, 33.9% of the businesses export, of which 17.7% do not export more than 10% of their total sales and 5.3% export over 75% of their total sales.

Figure 3: Distribution of export intensity by country



Source: GEM (2015).

[5] Note that the GEM data for nascent entrepreneurship does not necessarily coincide with aggregate trade data. According to Eurostat data, the aggregate share of exports of goods and services in GDP in the 2007–2015 period was 23.1–33.6% for Spain, 19.0–32.4% for Greece, 22.4–29.7% for Italy, and 27.3–40.6% for Portugal. Therefore, the data seems to imply that nascent businesses are more export-oriented than the average business in some countries (for example, Portugal), but are in line with existing businesses in other countries (for example, Spain).

These data hint at the existence of two groups of exporters in the SE4 countries: a larger group that has lower export intensity, and a smaller group that has higher export intensity. This characterization is most pronounced in the case of Portugal and it is compatible with the coexistence of low and stagnating aggregate productivity with a few very internationalized large firms (Gopinath et al., 2017; Nogueira and Inácio, 2017; Pinheiro Alves, 2017). The non-linearity existent in the data for export intensity can be well captured by an ordered logit model that takes into account all the intervals of export intensity provided by the GEM data, with the binary logit for export propensity revealing whether the extensive and intensive margin decisions are significantly different.

The individual-level covariates obtained from the APS comprise personal characteristics of the entrepreneur (gender, age, education level, and income level), motives for entrepreneurship (greater independence, increase personal income, and just maintain income)[6] and a perception variable (knowing other entrepreneurs). Other individual-level variables related to the characteristics of the business are its number of owners, the contemporaneous number of jobs created and its expected five-year job growth rate, as well as variables related to technology, innovation and competition (use of technological innovations, selling a new product, and the number of competitors). The contemporaneous number of jobs, as well as the age and income level of the entrepreneur were not significant covariates.[7] Neither were other perceptual variables such as the alertness to opportunities, fear of failure, and confidence about one's own skills (see Arenius and Minitti (2005) for an assessment of perceptual variables). In this paper, the covariates that were not relevant were not included in the final regressions.

As shown in Table A2, an average of 55.6% of the sampled entrepreneurs claims to know other entrepreneurs. It can also be seen that on average 38.4% are women, 31.1% have some secondary studies and 51.2% are motivated by greater independence. The average business in the sample has 1.8 owners, employs 3.4 people and expects to employ 351 people within five years. In the sample, 58% of businesses do not offer a new product, 73.8% do not use any new technology and 59.46% face many competitors.

The country-level variables obtained from the NES are country mean scores measured in 5-point Likert scales and grouped into topics A to R, covering issues such as the country's financial environment (topic A), government quality and support (topics B, C and Q), education quality and entrepreneurship know-how (topics D and L), innovation environment and support (topics E, N and R), business infrastructure (topics F, G and H), cultural and social views on entrepreneurship (topics I, K and M), and views on gender roles (topic P). In order to facilitate the analysis and restrict multicollinearity problems, country-level normalized factor scores are obtained for each of the seven variable groups described. The country-level variables were reduced to 22 factors that were obtained applying principal components with varimax rotation and Kaiser normalization within each of the seven NES aggregates to facilitate interpretation. The details on those factors are provided in Table A4.

---

[6] To achieve greater independence and to increase personal income may be seen as opportunity motives, whereas to just maintain income is more akin to a necessity motive.

[7] As characterization of the entrepreneurs in the sample it is relevant to mention that 28.86% and 31.37% are in the 25–34 and 35–44 age ranges, respectively, and that 40.38% belong to the upper income tercile.

Table A5 shows the relative strengths and weaknesses of SE4 countries for the 22 factors obtained. Due to the normalization of the factors, the means are always very close to zero, although the 5% confidence intervals are quite wide, revealing implicit country differences. Factors that have confidence intervals that span over positive values longer (shorter) than over negative values can be regarded as strengths (weaknesses). Thus, it is possible to identify as relative strengths the availability of private funding, the role of the education system and know-how in starting a business, the level of support to innovation and new technology, market structure and functioning, and the existence of social support to entrepreneurship.

Some relative weaknesses are the weak governmental support to entrepreneurship, in particular through the tax system and bureaucratic system (length of time required for new firms to obtain permits and licenses), the weak know-how in managing a business, the weak infrastructure affordability and efficiency (utilities such as electricity, gas and water, and communications networks, as well as business support services), the perceived lack of entrepreneurial opportunities, the low social status of entrepreneurs in the context of national culture, and the perceived lack of gender equality of opportunities through the level of knowledge and skills required to start a new business.

4 Export activity of nascent businesses in SE4 countries

4.1 Results for individual-level variables

Tables 1 and 2 show the regression results for, respectively, export intensity and export propensity, considering intercept differences in the SE4 countries by means of country fixed effects and controlling also for industry and year fixed effects. In Table 1, the export intensity model is built-up progressively, with the benchmark model (5) being compared to two robustness checks: model (6) adding the knowledge of other entrepreneurs, which eliminates roughly half of the observations, and model (7) adding country-year fixed effects to account for the different evolution of the SE4 countries during the sample period. In Table2, only these three models are shown for export propensity.

The results on Table 1 reveal that, on average, job growth expectations are positively associated to high export intensity, but this link is weakened when the use of new technology and especially selling a new product are considered. Therefore, it can be said that these two variables, with a positive coefficient always significant at 1%, fully mediate any link between the entrepreneur's expectations for business growth and export intensity. Using new technology and selling a new product have associated odd-ratios of 0.62–0.82 and 0.44–0.68, respectively, making it more than twice as likely that a business exports a high share of total sales. The effect of competition is weakly significant at 10% and possibly non-linear as related to the degree of innovation. Women entrepreneurs are less likely to export a high share of total sales, although this is a complex effect, itself mediated by other variables, as shown by Marques (2017a, 2017b), and it loses significance if a two-stage model is used. To have graduate studies is positively associated with export intensity but the association is significant only at the 10%

Table 1: Export intensity

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*	(5) *expint*	(6) *expint*	(7) *expint*
jobgrow	4.64e-05**	3.81e-05*	2.43e-05	1.69e-05	1.54e-05	-1.32e-05	1.78e-05
	(2.23e-05)	(2.30e-05)	(2.32e-05)	(2.47e-05)	(2.44e-05)	(3.64e-05)	(2.43e-05)
newtech (New)		0.334***	0.259***	0.225***	0.216***	0.327***	0.202**
		(0.0779)	(0.0789)	(0.0798)	(0.0800)	(0.109)	(0.0813)
newtech (Very Latest)		0.591***	0.493***	0.489***	0.481***	0.438***	0.472***
		(0.119)	(0.122)	(0.122)	(0.122)	(0.159)	(0.123)
newprod (Some)			0.416***	0.384***	0.384***	0.331***	0.379***
			(0.0751)	(0.0779)	(0.0778)	(0.107)	(0.0783)
newprod (All)			0.857***	0.814***	0.814***	0.563***	0.814***
			(0.0925)	(0.0948)	(0.0948)	(0.133)	(0.0957)
compete (Few)				0.216*	0.222*	0.0973	0.211*
				(0.123)	(0.123)	(0.164)	(0.123)
compete (Many)				0.0423	0.0461	-0.0640	0.0352
				(0.121)	(0.121)	(0.163)	(0.122)
nowners				0.0638**	0.0652**	0.0328	0.0652**
				(0.0263)	(0.0266)	(0.0376)	(0.0266)
owoman				-0.137**	-0.144**	-0.164*	-0.140**
				(0.0681)	(0.0680)	(0.0922)	(0.0685)
educ (Some sec)				0.382	0.372	0.286	0.345
				(0.303)	(0.303)	(0.327)	(0.309)
educ (Sec deg)				0.438	0.428	0.238	0.384
				(0.303)	(0.303)	(0.327)	(0.309)
educ (Post-sec)				0.449	0.451	0.528	0.435
				(0.301)	(0.302)	(0.324)	(0.307)
educ (Grad)				0.608**	0.604*	0.556*	0.564*
				(0.308)	(0.309)	(0.338)	(0.314)
Motive (indep)					-0.0539	0.0843	-0.0580
					(0.0818)	(0.111)	(0.0823)
Motive (increase inc)					-0.0930	-0.134	-0.0881
					(0.0909)	(0.124)	(0.0915)
Motive (maintain inc)					0.281**	0.532***	0.284**
					(0.128)	(0.169)	(0.129)
knowent						0.239***	
						(0.0916)	
Observations	7,463	6,787	6,787	6,707	6,707	3,761	6,707
Model F test	8.444***	7.568***	9.823***	8.294***	8.045***	5.547***	7.170***
Country*year FE	NO	NO	NO	NO	NO	NO	YES

NOTE: The regression method is ordered logit with survey weights that match the gender-age distribution of the adult population between 18–64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *expint* being the dependent variable. All regressions include country, industry and year fixed effects. Cut points are omitted but are all significant.

Table 2: Export propensity

	(1)	(2)	(3)
VARIABLES	*exporter*	*exporter*	*exporter*
jobgrow	5.64e-06	-1.92e-05	8.38e-06
	(2.10e-05)	(2.81e-05)	(2.07e-05)
newtech (New)	0.282***	0.388***	0.279***
	(0.0869)	(0.118)	(0.0878)
newtech (Very Latest)	0.429***	0.391**	0.419***
	(0.128)	(0.165)	(0.131)
newprod (Some)	0.360***	0.300***	0.348***
	(0.0813)	(0.112)	(0.0818)
newprod (All)	0.720***	0.481***	0.709***
	(0.0944)	(0.130)	(0.0953)
compete (Few)	0.233*	0.150	0.227*
	(0.129)	(0.169)	(0.130)
compete (Many)	-0.00753	-0.0835	-0.0148
	(0.126)	(0.165)	(0.127)
nowners	0.0517*	0.00483	0.0506*
	(0.0274)	(0.0362)	(0.0273)
owoman	-0.138*	-0.162*	-0.137*
	(0.0707)	(0.0965)	(0.0711)
educ (Some sec)	0.441	0.347	0.411
	(0.317)	(0.347)	(0.327)
educ (Sec deg)	0.500	0.310	0.457
	(0.318)	(0.347)	(0.329)
educ (Post-sec)	0.543*	0.659*	0.538*
	(0.315)	(0.342)	(0.324)
educ (Grad)	0.706**	0.660*	0.667**
	(0.323)	(0.358)	(0.333)
Motive (indep)	-0.0700	0.0652	-0.0723
	(0.0838)	(0.116)	(0.0842)
Motive (increase inc)	-0.186**	-0.228*	-0.182**
	(0.0920)	(0.125)	(0.0926)
Motive (maintain inc)	0.349**	0.617***	0.352**
	(0.145)	(0.193)	(0.147)
knowent		0.240**	
		(0.0948)	
Constant	-1.132***	-0.766*	-1.340***
	(0.393)	(0.459)	(0.460)
Observations	6,707	3,761	6,707
Model F test	7.132***	4.783***	6.315***
Country*year FE	NO	NO	YES

level, as education may be partly mediated by innovation and partly a signal of higher entrepreneurial ability and business know-how. To maintain the income level is a motivation positively associated to export intensity, hinting at the role of export markets in compensating for weak domestic demand in the SE4 countries during the period under analysis. Finally, the number of business owners is positively associated with export intensity, but this effect is fully mediated by knowing other entrepreneurs, which indicates that the incorporation of several owners to the business is equivalent to having an entrepreneurial network.

The results in Table 2 reveal that the determinants of binary export propensity behave similarly to those of ordered export intensity. Using new technology and selling a new product have associated odd-ratios of 1.32–1.52 and 1.42–2.03, respectively, making it up to twice as likely that a business exports. The education level of the entrepreneur is positively associated with export propensity. This effect is found at the level of graduate studies with 5% significance, although it drops to 10% if knowing other entrepreneurs is taken into account, hinting that having access to an entrepreneurial network may partly compensate for ability and know-how. The education effect on export propensity is also found at the level of post-secondary studies with 10% significance, although this education level did not relate to export intensity. Whereas to maintain the income level is positively associated to export propensity, as it was to export intensity, to increase income is negatively associated to export propensity (and this motive had no effect on export intensity). Since its significance level drops from 5% to 10% when considering access to entrepreneurial networks, it could be associated to the perceived costs of exporting, which entrepreneurs who are motivated by increasing income are not willing to incur.

4.2 Results for country-level variables

The regression results for each of the 22 country-level factors obtained are provided in Table 3. Those factors that were not significantly associated to the dependent variables before controlling for other variables were not included in the regressions. All regressions include as control variables those individual-level variables that were relevant in the regressions of Tables 1 and 2: using a new technology, offering a new product, and the entrepreneur's gender and education level. The inclusion of these variables does not affect factor significance. Out of the 22 factors obtained, 17 and 13 are significantly associated with export intensity and propensity, respectively. The "knowing other entrepreneurs" variable is included in model (3) as it halves the number of observations. It only affects the significance of the social status of entrepreneurs, as presumably knowing other entrepreneurs who can be taken as role-model removes relevance from the country's views on the social status of entrepreneurs as a group.

In model (2), country, industry and year fixed effects are included. Some factors are fully explained by those fixed effects and lose significance, notably in education and entrepreneurship know-how, and in business infrastructure. Still, there are 8 factors that remain significantly associated with both export intensity and propensity, 5 of them positively (Availability of equity funding, debt funding, and government subsidies; National government's macroeconomic support to entrepreneurship; New technology's interest and affordability; Business interest in new technology and respect for IPRs; Social status of entrepreneurs) and 3

Table 3: Country-level factors

	Panel A: *expint*																			
	Financial Environment		Government			Education		Innovation		Business Infrastructure		Social and cultural views			Gender roles	
	(1)	(2)	(1)	(2)		(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(3)	(1)	(2)
F11	0.214***	0.285**	**F21** 0.114***	0.734***	**F31**	0.143***	0.117	**F42** 0.194***	0.172**	**F51** 0.0796**	0.385	**F61** 0.242***	-0.00561	0.458	**F71** 0.0712**	-0.139
	(0.0416)	(0.134)	(0.0371)	(0.198)		(0.0382)	(0.122)	(0.0415)	(0.0818)	(0.0386)	(0.255)	(0.0341)	(0.214)	(0.383)	(0.0358)	(0.155)
F12	0.0772**	-0.0599	**F23** -0.136***	-0.745***	**F32**	0.210***	-0.0238	**F44** 0.216***	0.392**	**F52** 0.0995***	-0.0628	**F62** 0.0688*	-0.465***	-0.527**	**F72** -0.223***	-0.304***
	(0.0379)	(0.0455)	(0.0342)	(0.144)		(0.0497)	(0.234)	(0.0333)	(0.157)	(0.0381)	(0.128)	(0.0377)	(0.174)	(0.246)	(0.0347)	(0.0947)
					F33	-0.116**	-0.0371			**F53** -0.266***	-0.0160	**F63** 0.0741**	0.748***	0.214		
						(0.0511)	(0.239)			(0.0358)	(0.184)	(0.0341)	(0.274)	(0.458)		
Observations	4,813	4,813	4,749	4,749		4,813	4,813	4,813	4,813	4,813	4,813	4,813	4,813	2,864	4,813	4,813
Model F	14.38***	11.31***	14.13***	11.90***		13.40***	11.01***	15.98***	11.66***	15.85***	11.07***	14.37***	11.98***	9.142***	15.11***	11.17***
Country FE	NO	YES	NO	YES		NO	YES	NO	YES	NO	YES	NO	YES	YES	NO	YES
Industry FE	NO	YES	NO	YES		NO	YES	NO	YES	NO	YES	NO	YES	YES	NO	YES
Year FE	NO	YES	NO	YES		NO	YES	NO	YES	NO	YES	NO	YES	YES	NO	YES
knowent	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO

NOTE: The regression method is ordered logit, with survey weights that match the gender-age distribution of the adult population between 18–64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1. All regressions include significant individual-level variables (*newtech*, *newprod*, *owoman*, *educ* and *knowent*.).

Panel B: *exporter*

	Financial Environment			Government			Education			Innovation			Business Infrastructure			Social and cultural views			Gender roles	
	(1)	(2)		(1)	(2)		(1)	(2)		(1)	(2)		(1)	(2)		(1)	(2)	(3)		(1)	(2)
F11	0.199***	0.374**	**F21**	0.0895**	0.848***	**F31**	0.0982**	0.121	**F42**	0.176***	0.141	**F51**	0.0498	0.685**	**F61**	0.285***	0.0906	0.603*	**F71**	0.0278	-0.155
	(0.0442)	(0.154)		(0.0403)	(0.242)		(0.0406)	(0.141)		(0.0443)	(0.100)		(0.0396)	(0.280)		(0.0380)	(0.223)	(0.343)		(0.0384)	(0.188)
F12	0.0847**	-0.0522	**F23**	-0.180***	-0.884***	**F32**	0.260***	-0.0650	**F44**	0.258***	0.496***	**F52**	0.0911**	-0.0885	**F62**	0.0172	-0.705***	-0.784***	**F72**	-0.277***	-0.295***
	(0.0421)	(0.0556)		(0.0375)	(0.179)		(0.0581)	(0.271)		(0.0373)	(0.180)		(0.0432)	(0.153)		(0.0413)	(0.205)	(0.280)		(0.0397)	(0.102)
						F33	-0.177***	0.0741				**F53**	-0.328***	0.110	**F63**	0.0471	0.751**	0.207			
							(0.0550)	(0.283)					(0.0398)	(0.200)		(0.0378)	(0.297)	(0.444)			
Observations	4,813	4,812		4,749	4,748		4,813	4,812		4,813	4,812		4,813	4,812		4,813	4,812	2,863		4,813	4,812
Model F-test	12.09***	7.073***		12.39***	7.425***		11.38***	6.762***		13.94***	6.958***		14.09***	6.965***		13.15***	7.345***	4.646***		13.59***	6.974***
Country FE	NO	YES		NO	YES		NO	YES		NO	YES		NO	YES		NO	YES	YES		NO	YES
Industry FE	NO	YES		NO	YES		NO	YES		NO	YES		NO	YES		NO	YES	YES		NO	YES
Year FE	NO	YES		NO	YES		NO	YES		NO	YES		NO	YES		NO	YES	YES		NO	YES
knowent	NO	NO		NO	NO		NO	NO		NO	NO		NO	NO		NO	NO	YES		NO	NO

NOTE: The regression method is binary logit, with survey weights that match the gender-age distribution of the adult population between 18–64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *exporter* obtained from *expint* making positive export intensity equal to 1. All regressions include significant individual-level variables (*newtech*, *newprod*, *owoman*, *educ* and *knowent*).

of them negatively (Local government's microeconomic support to entrepreneurship; National culture; Equality of opportunities for men and women). Whilst the positive association is quite intuitive and logical, the negative association can be explained by the fact that the dependent variables represent export activity decisions, not the entrepreneurship decision in itself, such that those factors may contribute to higher entrepreneurship rates whilst those new businesses do not have an export orientation.[8]

5 Robustness checks on the individual-level export intensity model

The export intensity model of Table 1 is estimated again for a variety of robustness checks with respect to other samples, various subsamples and methods. Although the specific results of each check are discussed below, in general the main results are very robust and confirm the role of innovation and technology, as well as the existence of entrepreneurship networks, in fostering export intensity.

5.1 Micro (0–1 jobs) versus small businesses (10–49 jobs)

In the full dataset, 47.25% of the businesses are micro businesses (0–1 jobs), whereas only 6.39% are small businesses (10–49 jobs). It could be that larger businesses are driven by different factors compared to smaller businesses. As a consequence, Table 1 regressions have been repeated for the two subsamples separately and the results summarized on Tables A6 and A7. It can be seen that the results for micro businesses replicate by and large those presented in Table 1, but for small businesses only the number of owners remains relevant due to the small size of the subsample.

5.2 Services versus manufacturing

In the full dataset, 87.76% of the businesses belong to the services sector, whereas only 12.24% can be found in the manufacturing sector. It could be that the services sector is moved by different determinants compared to the manufacturing sector. As a consequence, Table 1 regressions have been repeated for the two subsamples and the results are shown on Tables A8 and A9. It can be seen that the results for the services subsample replicate by and large those presented in Table 1, but for the manufacturing subsample only selling a new product and having many competitors remain relevant due to the small size of the subsample.

[8] See Marques (2017b) for a discussion of the comparison between entrepreneurship rates in sectors with different levels of risk due to either innovation or export activities.

5.3 Nascent versus young businesses

As stated before, the dataset used is cross-sectional and it is not always possible to address any problems of reverse causality. However, the full sample is composed of 46.22% nascent entrepreneurs ("respondents (18–64) involved in nascent business, defined as active, expect to be a full or part owner, and no salaries or wages paid for over three months") and 53.78% baby business owner-managers ("respondents (18–64) involved as owner and manager in new firms for which salaries or wages have been paid between 3 and 42 months"). The survey question for the former group is "What proportion of your customers **will** normally live outside the country?", whereas for the latter group is "What proportion of your customers normally live outside the country?" Although the variable is not forward as such, in fact it has a prospective nature. Therefore, whilst it is recognized that in cross-sectional data only correlations can be discussed, the individual-level regressions have been repeated for the two subsamples of nascent and young businesses, one prospective and another contemporaneous. The regressions results are presented on Tables A10 and A11.

Although having a new product and a new technology increase export intensity for the two groups, there are differences in several variables. Start-ups (nascent) are negatively affected by the number of competitors, whilst owner-manager young businesses are positively affected. Also, women are negatively affected in start-ups but not in young businesses, whereas the number of owners has a positive effect only in the latter group. Tertiary education increases export intensity only in the start-up group. In this group, greater independence goes against export intensity, but just maintaining income fosters it, whilst in the owner-manager group increasing income makes export intensity lower. These differences can be interpreted in terms of prospective versus contemporaneous behaviour.

5.4 Spain

In the dataset used initially for the period 2003–2010, Spain takes up 82.97% of the observations (Table A15) and, if there are no outliers driving the results, it would be expected that the results obtained for Spain replicates the overall results. Indeed, repeating the estimations for Spain does not change the main overall results, as can be seen in Table A12. An exception is the graduate education level, which appeared with a coefficient significant at the 10% level in the full sample and loses significance for Spain. The full sample significance is due to Greece, especially with respect to export propensity, where the coefficient of the graduate education level reaches the 5% significance level.

5.5 Interactions

Many of the covariates are correlated, which may cause simultaneity and multicollinearity. One way of finding out whether there are pairs of covariates that have only a joint effect is to add to the individual-level regressions one interaction between each pair of covariates at a time. In this

way, it can be seen whether an interaction removes the individual effects of the two interacted covariates. The estimation results are displayed in Table A13.

When the export intensity models of Table 1 are considered, a few interactions survive the inclusion of the remaining variables: with a positive coefficient, newtech#compete, newtech#motive2, newprod#nowners, newprod#motive1; with a negative coefficient, newtech#nowners, newprod#gemeduc, compete#nowners. The predominance of having a new technology or a new product in the significant interactions confirms the results of the paper regarding the importance of those characteristics for exporting. The inclusion of the interaction removes significance from the coefficient of at least one of the covariates present in that interaction, so that it is possible that synergic effects are present as second order.

5.6 Zero-inflated probit

The results of Tables 1 and 2 are based on, respectively, the ordered logit and binary logit models. As stated in Section 3, the regression models for export propensity and for export intensity may be related by means of a second stage ordered probit for positive export intensity with a Heckman selection correction estimated as a first stage binary probit for export propensity. However, in this sample, the correlation between the errors of the two equations is not significant, so the selection model is not required. Therefore, the export intensity and propensity models are estimated separately, with the former being estimated as ordered logit, and the latter being estimated as a binary logit.

It could be the case that the Heckman selection model is not the most suitable because export intensity is measured on an ordinal scale that includes the value zero, which is observable, that is, it is known that the business does not export. The Heckman model is most suitable when the zeros correspond to non-observable values because of truncation, that is, the value for a business's export intensity is not known. It could be zero or not. Due to this issue, the most appropriate selection model may be the zero-inflated ordered probit model (Harris and Zhao, 2007).

Table 1 regressions have been repeated for this alternative method and the estimation results are displayed in Table A14. It can be seen that having a new product or a new technology, having a tertiary education level, or knowing other entrepreneurs, positively influences the first stage of exporting. On the contrary, being a woman has a negative influence on the first stage of exporting. However, this behavior of the covariates corresponds to what is found in the model of Table 2 for export propensity. Therefore, the zero-inflation probit model returns a very similar result to Tables 1 and 2: for these data, export propensity and export intensity follow similar models.

5.7 Data for 2011–2015

Although the paper used data for 2003–2010, more recent data is available for the four countries up to 2015.[9] In the new data for 2011–2015, the country structure is not very different from that of the first period, with Spain having 81.48% of the observations, Greece 7.69%, Portugal 6.17%, and Italy 4.66% in 2011–2015 (Table A15).

The descriptive statistics for the post-recession period 2011–2015 are shown in Table A16. It can be said that 65.42% of the businesses does not export, whilst 5.15% exports more than 75% of sales. There are 57.44% of businesses with two owners and 25.14% with three owners. Only 4.47% of the surveyed entrepreneurs are women. A very recent (recent) technology is used by 13.10% (20.07%) of the businesses, whilst 36.13% of the businesses sell a new product. The same product is offered by few (none) of other businesses for 35.78% (10.66%) of the sample. Regarding the education level of the entrepreneurs, 33.05%, 60.74% and 2.90% has, respectively, primary-level, secondary-level and tertiary-level studies. To increase income, gain independence or just out of necessity are the motives for setting up a new business for, respectively, 21.94%, 16.57% and 34.23% of the entrepreneurs surveyed. To have known other entrepreneurs was considered as important in setting up a new business for 30.41% of the sample.

The individual-level regressions have been repeated for 2011–2015 and the estimation results are shown in Table A17. Some adjustments had to be made as some variables that were reported as continuous are now reported in intervals and the dummy for woman entrepreneur had to be removed for the reason explained above. Besides, the export intensity intervals differ[10] and the industry classification is not the same (now Industry ISIC version 4, 1-digit is used). As such, it does not make sense to simply extend the sample and the regressions for 2011–2015 have been added separately. The results show that job growth, the number of owners, being motivated by increasing income and gaining independence, as well as having a new product and, to a lesser extent, a new technology, all influence export intensity positively.

6 Discussion and concluding remarks

This paper finds that, in the SE4 countries, the ability of a nascent business to offer a new product, or a new technology, is very significantly associated to both export propensity and intensity. There are several transmission channels from innovation to exporting. On the one hand, there is a supply argument linked to a higher productivity derived from innovation. On the other hand, there is a demand-side argument through which innovation leads to higher product competitiveness in foreign markets, thus fostering the exporting activity. This transmission

[9] GEM APS and NES indicators are available until 2018 for Greece, Italy and Spain, and until 2016 for Portugal. The full datasets are only made available to the public 3 years after data collection, so that 2015 is the last year available online.

[10] In the 2011–2015 data, export intensity is defined by 0%, less than 25%, 25-50% and over 75%.

channel may be observed through product upgrading or through a combination of product, process and marketing innovations.

Exporting is also positively influenced by having a graduate education, the number of owners and knowing other nascent entrepreneurs. A graduate education level provides the entrepreneur with more knowledge, know-how and skill, which may be required in foreign markets. The number of owners of the business provides it with a pool of knowledge, know-how and skill, as well as more financial resources, allowing for venturing into foreign markets. Knowing other nascent entrepreneurs may have similar advantages, in addition to providing a role-model to newcomers. Additionally, Grossman et al. (2017) argue that productivity depends on the ability of manager and workers, proxied by their education level, and Dinopoulos and Unel (2017) explain that high-ability entrepreneurs invest in managerial capital, increasing firm productivity that leads to exporting.

In the 2003–2010 data used, 42.02% of the surveyed entrepreneurs in the SE4 countries claim to be offering a new product. If new businesses follow the tendency of established businesses of exporting low value-added products, that can be harmful for the country's long-run growth (Dimelis et al., 2017). Given that change may be easier for nascent businesses than for long-established ones, it would be important to actively promote innovation among the former and target the profile of entrepreneur most prone to innovation, at the same time facilitating change for those profiles less likely to innovate by understanding the mechanisms that hinder them.

As an example, Marques and Moreira (2013) found that a typical innovative entrepreneur is a man who graduated in engineering, was motivated by opportunity, greater independence and increasing income, had high social capital, and was likely to start a business in knowledge-intensive technological sectors; whilst a typical non-innovative entrepreneur is a woman who graduated in social science, law or education, was motivated by necessity, had low social capital, and was likely to start a business in health care and education sectors. Moreover, another study found that 30.5% of the participants in entrepreneurship support programs in 2007-2013 were engineering, computer-science and technology graduates, and 19% were economics and business studies graduates (Marques et al., 2015). As a consequence, those programs do not provide equal support to different target groups.

There is evidence that the education system can play a crucial role in the promotion of entrepreneurship, namely by promoting adequate attention to entrepreneurship in primary and secondary education, providing good and adequate knowledge in business and management education, good preparation for self-employment in vocational, professional and continuing education, and teaching how to start and manage a small business (Marques, 2015; Marques et al., 2015). The education system can also work towards improving the views that starting a new business is a socially acceptable career option for women, as well as ensuring gender equality in the provision of knowledge and skills to start a new business. In conjunction to the role of the education system in providing that knowledge and skills, it is fundamental to implement realistic and operative forms of conciliation, such as the provision of sufficient social support services when there are dependent people in the family, including children, disabled or older people. The presence of aged dependents in the household is a more and more common situation to which European countries need to provide growing attention and, in turn, the need for work-

family balance is one of the most relevant factors for women's entrepreneurship (Santos et al., 2017).

Other policy areas in which greater effort needs to be made is in reducing the length of time to obtain required permits and licenses, and in protecting copyrights and trademarks. Since these issues depend essentially on adequate legislation and monitoring, it seems that there is good scope for policy intervention in these areas.

The type of survey data used in this paper has the potential to relate internationalization, innovation, competition and competitiveness, and allow a policy-relevant analysis with international comparability, given that it is harmonized across countries and it contains policy variables in the same topics as the individual-level variables. The GEM data used in this paper samples the 18-64 age range from the whole population, but it presents some caveats. On the one hand, the GEM APS and NES indicators have the advantage of picking-up newly formed businesses, which have a different character to older ones, in particular are more prone to innovation, but to pick up cohorts of newly formed businesses it forms cross-sectional waves. On the other hand, the number of nascent entrepreneurs participating in the GEM surveys is very unbalanced across countries. As an example, in Portugal the sample size is 153 in 2005–2010 and it represents only 0.22% of the full worldwide sample. In comparison, the number of surveyed businesses in Spain was 7,268 in the same period, which represented 10.57% of the worldwide total. Taking into account the different economic size of the two countries as measured by GDP, a participation of around 1,198 businesses would be expected in Portugal. Instead, participation was only 13% of the expected number. Therefore, in order to achieve more robust policy conclusions, it would be desirable to have representative samples for each country. Otherwise, the small sample size would mean that there is a gap in the entrepreneurship rate, implying in that case that there is potential for entrepreneurship promotion relative to the country's economic size.

Given the links between the educational level of the entrepreneur, using a new technology, offering a new product, and export propensity and intensity, it seems that, in SE4 countries, entrepreneurship may be a way of increasing and improving young people's employment, renewing those countries' business structure, fostering product and process innovation, thereby allowing future increases in productivity, greater international competitiveness and, all in all, promoting long-run growth.

References

Acs, Z., Desai, S., and Hessels, J. (2008). Entrepreneurship, Economic Development and Institutions. *Small Business Economics*, 31(3), 219–234. https://link.springer.com/article/10.1007/s11187-008-9135-9

Aitken, B., Hanson, G., and Harrison, A. (1997). Spillovers, Foreign Investment, and Export Behavior. *Journal of International Economics*, 43(1–2), 103–132. https://www.sciencedirect.com/science/article/abs/pii/S002219969601464X

Alvarez, C., Urbano, D., and Amorós, J. (2014). GEM Research: Achievements and Challenges. *Small Business Economics*, 42(3), 445–465. https://link.springer.com/article/10.1007/s11187-013-9517-5

Arenius, P. and Minitti, M. (2005). Perceptual Variables and Nascent Entrepreneurship. *Small Business Economics*, 24(3), 233–247. https://www.jstor.org/stable/40229421?seq=1

Ardagna, S., and Lusardi, A. (2008). Explaining International Differences in Entrepreneurship: The Role of Individual Characteristics and Regulatory Constraints. NBER Working Paper 14012. https://www.nber.org/papers/w14012

Autio, E., and Acs, Z. (2010). Intellectual Property Protection and the Formation of Entrepreneurial Growth Aspirations. *Strategic Entrepreneurship Journal*, 4(3), 234–251. https://onlinelibrary.wiley.com/doi/abs/10.1002/sej.93

Bergmann, H., Mueller, S., and Schrettle, T. (2014). The Use of Global Entrepreneurship Monitor Data in Academic Research: A Critical Inventory and Future Potentials. *International Journal of Entrepreneurial Venturing*, 6(3), 242–276. https://ideas.repec.org/a/ids/ijeven/v6y2014i3p242-276.html

Bernard, A.B., and Jensen, J.B. (2004). Why some Firms Export. *Review of Economics and Statistics*, 86(2), 561–569. https://www.jstor.org/stable/3211647?seq=1#metadata_info_tab_contents

Bernard, A., Jensen, B., Redding, S., and Schott, P. (2012). The Empirics of Firm Heterogeneity and International Trade. *Annual Review of Economics*, 4, 283–313. https://www.annualreviews.org/doi/abs/10.1146/annurev-economics-080511-110928

Block, J., Kohn, K., Miller, D., and Ullrich, K. (2015). Necessity Entrepreneurship and Competitive Strategy. *Small Business Economics*, 44(1), 37–54. https://link.springer.com/article/10.1007/s11187-014-9589-x

Bogenhold, D., Heinonen, J., and Akola, E. (2014). Entrepreneurship and Independent Professionals: Social and Economic Logics. *International Advances in Economic Research*, 20(3), 295–310. https://ideas.repec.org/a/kap/iaecre/v20y2014i3p295-31010.1007-s11294-014-9474-z.html

Bojica, A.M. and Fuentes, M.M.F. (2012). Knowledge Acquisition and Corporate Entrepreneurship: Insights from Spanish SMEs in the ICT Sector. *Journal of World Business*, 47(3), 397–408. https://www.sciencedirect.com/science/article/pii/S1090951611000666

Bosma, N., Coduras, A., Litovsky, Y., and Seaman, J. (2012). *GEM Manual. A Report on the Design, Data and Quality Control of the Global Entrepreneurship Monitor*. Available online at: http://www.gemconsortium.org

Caldera, A. (2010). Innovation and Exporting: Evidence from Spanish Manufacturing Firms. *Review of World Economics*, 146(4), 657–689. https://ideas.repec.org/a/spr/weltar/v146y2010i4p657-689.html

Cassiman, B., Golovko, E., and Martínez-Ros, E. (2010). Innovation, Exports and Productivity. *International Journal of Industrial Organization*, 28(4), 372–376. https://www.sciencedirect.com/science/article/abs/pii/S0167718710000378

Castellani, D., and Zanfei, A. (2007). Internationalisation, Innovation and Productivity: How do Firms differ in Italy? *The World Economy*, 30(1), 156–176. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-9701.2007.00875.x

Clerides, S., Lack, S., and Tybout, J. (1998). Is Learning by Exporting Important? Micro-Dynamic Evidence from Colombia, Mexico and Morocco. *Quarterly Journal of Economics*, 113(3), 903–947. https://www.jstor.org/stable/2586877?seq=1#metadata_info_tab_contents

De Luca, G., and Perotti, V. (2011). Estimation of Ordered Response Models with Sample Selection. *The STATA Journal*, 11(2), 213–239. https://journals.sagepub.com/doi/10.1177/1536867X1101100204

Dimelis, S., Giotopoulos, I., and Louri, H. (2017). Can Firms Grow Without Credit? A Quantile Panel Analysis in the Euro Area. *Journal of Industry, Competition and Trade*, 17(2), 153–183. https://ideas.repec.org/a/kap/jincot/v17y2017i2d10.1007_s10842-016-0216-1.html

Dinopoulos, E., and Unel, B. (2017). Managerial Capital, Occupational Choice and Inequality in a Global Economy. *Canadian Journal of Economics*, 50(2), 365–397. https://onlinelibrary.wiley.com/doi/abs/10.1111/caje.12262

Eurostat (2017). Extracted April 2017. Available at: http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00001

Fernández-Mesa, A., and Alegre, J. (2015). Entrepreneurial Orientation and Export Intensity: Examining the Interplay of Organizational Learning and Innovation. *International Business Review*, 24(1), 148–156. https://www.sciencedirect.com/science/article/abs/pii/S0969593114001097

Figueira, C. (2017). Determinants of the Portuguese GDP Stagnation during the 2001–2014 Period: An Empirical Investigation. *GEE Papers*, Número 68, Gabinete de Estratégia e Estudos, Ministério da Economia. https://ideas.repec.org/p/mde/wpaper/0068.html

GEM (2015). Extracted April 2015. Available at: http://www.gemconsortium.org

Gopinath, G., Kalemli-Özcan, S., Karabarbounis, L., and Villegas-Sanchez, C. (2017). Capital Allocation and Productivity in South Europe. *Quarterly Journal of Economics*, published online 20 June 2017. https://doi.org/10.1093/qje/qjx024

Görg, H., and Hanley, A. (2017). Firms' Global Engagement and Management Practices. *Economics Letters*, 155, 80–83. https://www.sciencedirect.com/science/article/abs/pii/S0165176517301295

Greenaway, D., and Kneller, R. (2007). Firm Heterogeneity, Exporting and Foreign Direct Investment. *Economic Journal*, 117(517), 134–161. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1468-0297.2007.02018.x

Groizard, J.L., and Marques, H. (2015). La Internacionalización de la Industria Española y los Efectos de la Gran Recesión. *Economía Industrial*, 397, 93–104. https://dialnet.unirioja.es/servlet/articulo?codigo=5297126

Grossman, G.M., Helpman, E., and Kircher, Ph. (2017). Matching, Sorting, and the Distributional Effects of International Trade. *Journal of Political Economy*, 125(1), 224–264. https://www.journals.uchicago.edu/doi/abs/10.1086/689608

Guiso, L., Sapienza, P., and Zingales, L. (2006). Does Culture Affect Economic Outcomes? *Journal of Economic Perspectives*, 20(2), 23–48. https://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.20.2.23

Harris, M.N., and Zhao, X. (2007). A Zero-inflated Ordered Probit Model, with an Application to Modelling Tobacco Consumption. *Journal of Econometrics*, 141(2), 1073–1099. https://www.sciencedirect.com/science/article/abs/pii/S0304407607000048

Helpman, E. (2006). Trade, FDI and the Organization of Firms. *Journal of Economic Literature*, 44, 589–630. https://www.jstor.org/stable/30032346?seq=1#metadata_info_tab_contents

Herrmann, A. (2010). Against the Schumpeterian Mainstream: A Review of Institutional Approaches to Entrepreneurship. *Socio-Economic Review*, 8(4), 735–746. https://academic.oup.com/ser/article/8/4/735/1672351

Hessels, J., and, van Stel, A. (2011). Entrepreneurship, Export Orientation, and Economic Growth. *Small Business Economics*, 37(2), 255–268. https://link.springer.com/article/10.1007/s11187-009-9233-3

Kylaheiko, K., Jantunen, A., Puumalainen, K., Saarenketo, S., and Tuppura, A. (2011). Innovation andIinternationalization as Growth Strategies: The Role of Technological Capabilities and Appropriability. *International Business Review*, 20(5), 508–552. https://www.sciencedirect.com/science/article/abs/pii/S0969593110001137

Koellinger, P., Minniti, M., and Schade, C. (2013). Gender Differences in Entrepreneurial Propensity. *Oxford Bulletin of Economics and Statistics*, 75(2), 213–234. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1468-0084.2011.00689.x

Lecuna, A., Cohen, B., and Chavez, R. (2017). Characteristics of High-growth Entrepreneurs in Latin America. *International Entrepreneurship Management Journal*, 13(1) 141–159. https://link.springer.com/article/10.1007/s11365-016-0402-y

Leiblein, M.J., and Reuer, J.J. (2004). Building a Foreign Sales Base: The Roles of Capabilities and Alliances for Entrepreneurial Firms. *Journal of Business Venturing*, 19(2), 285–307. https://www.sciencedirect.com/science/article/abs/pii/S0883902603000314

Levie, J., and Autio, E. (2008). A Theoretical Grounding and Test of the GEM Model. *Small Business Economics*, 31(3), 235–263. https://link.springer.com/article/10.1007/s11187-008-9136-8

Levie, J., Autio, E., Acs, Z., and Hart, M. (2014). Global Entrepreneurship and Institutions: An Introduction. *Small Business Economics*, 42(3), 437–444. https://link.springer.com/article/10.1007/s11187-013-9516-6

Lewandowska, M. S., Szymura-Tyc, M., and Gołębiowski, T. (2016). Innovation Complementarity, Cooperation Partners, and New Product Export: Evidence from Poland. *Journal of Business Research*, 69(9), 3673–3681. https://www.sciencedirect.com/science/article/abs/pii/S0148296316300480

Liñán, F., and Fernandez-Serrano, J. (2014). National Culture, Entrepreneurship and Economic Development: Different Patterns across the European Union. *Small Business Economics*, 42(4), 685–701. https://link.springer.com/article/10.1007/s11187-013-9520-x

Máñez, J.A., Rochina-Barrachina, M.E., and Sanchis-Llopis, J.A. (2015). The Dynamic Linkages among Exports, R&D and Productivity. *The World Economy*, 38(4), 583–612. https://onlinelibrary.wiley.com/doi/abs/10.1111/twec.12160

Manova, K. (2013). Credit Constraints, Heterogeneous Firms and International Trade. *Review of Economic Studies*, 80(2), 711–744. https://academic.oup.com/restud/article/80/2/711/1538317

Marques, A.P. and Moreira, M. (2013). 'Traditional' and 'Innovative' Potential Entrepreneurs among Portuguese Graduates: A Case Study. *Journal of Educational and Social Research*, 3(7), 134–142. https://www.mcser.org/journal/index.php/jesr/article/view/940

Marques, A.P. (2015). Career Options and Entrepreneurial Potential among Female Graduates: Motivations, Obstacles and Realities. *European Journal of Economics and Business Studies*, 3(1), 143–148. https://econpapers.repec.org/article/eurejesjr/53.htm

Marques, A.P., Couto, A.I. and Rocha, P. (2015). Entrepreneurial Learning in Higher Education: Perceptions, Realities and Collaborative Work from the Stakeholder Point of View. *European Journal of Social Sciences Education and Research*, 2(4), 254–261. http://journals.euser.org/index.php/ejser/article/view/792

Marques, H. (2017a). Gender, Entrepreneurship and Development: Which Policies Matter? *Development Policy Review*, 35(2), 197–228. https://doi.org/10.1111/dpr.12206

Marques, H. (2017b). The Routineness of Tasks, Gender and Institutions in Entrepreneurship. *Socio-Economic Review*, 15(4), 815–851. https://doi.org/10.1093/ser/mwx017

McGaughey, S.L., Kumaraswamy, A., and Liesch, P.W. (2016). Institutions, Entrepreneurship and Co-evolution in International Business. *Journal of World Business*, 51 (6), 871–881. https://doi.org/10.1016/j.jwb.2016.07.003

Melitz, M. (2003). The Impact of Trade on Intra-industry Reallocations and Aggregate Industry Productivity. *Econometrica*, 71(6), 1695–1725. https://doi.org/10.1111/1468-0262.00467

Melitz, M., and Redding, S. (2012). Heterogeneous Firms and Trade. *NBER Working Paper 18652*, December. https://www.nber.org/papers/w18652

Mohavedi, M., Shahbazi, K., and Gaussens, O. (2017). Innovation and Willingness to Export: Is there an Effect of Conscious Self-selection? *Economics: The Open-Access, Open-Assessment E-Journal*, 11 (2017-25): 1–22. http://dx.doi.org/10.5018/economics-ejournal.ja.2017-25

Monreal-Pérez, J., Aragón-Sánchez, A., and Sánchez-Marín, G. (2012). A Longitudinal Study of the Relationship between Export Activity and Innovation in the Spanish Firm: The Moderating Role of Productivity. *International Business Review*, 21(5), 862–877.

Nogueira, G., and Inácio, P. (2017). A Participação Portuguesa nas Cadeias de Valor Globais. *Temas Económicos*, Número 49, Gabinete de Estratégia e Estudos, Ministério da Economia. https://www.gee.gov.pt/pt/estudos-e-seminarios/estudos-de-temas-economicos-category/705-a-participacao-portuguesa-nas-cadeias-de-valor-globais

Pinheiro Alves, R. (2017). Portugal: Recent Evolution in Productivity, *BMEP N.º 05|2017 – Em Análise*, Gabinete de Estratégia e Estudos, Ministério da Economia. https://www.gee.gov.pt/pt/estudos-e-seminarios/artigos-category/630-portugal-recent-evolution-in-productivity-em-analise-bmep-de-maio-de-2017

Puig, F., and Marques, H. (2010). *Territory, Specialization and Globalization in European Manufacturing*. Routledge (ISBN: 978-0-415-55206-6).

Puig, F., González-Loureiro, M.. and Marques, H. (2014). Supervivencia, Crecimiento e Internacionalización en Clústeres Industriales. *Economía Industrial*, 391, 133–140. https://scinapse.io/papers/176704480

Reynolds, P., Bosma, N. Autio, E., Hunt, S., De Bono, N., Servais, I, Lopez-Garcia, P., and Chin, N. (2005). Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998–2003. *Small Business Economics*, 24(3), 205–231. https://link.springer.com/article/10.1007%2Fs11187-005-1980-1

Roberts, M., and Tybout, J. (1997). An Empirical Model of Sunk Costs and the Decision to Export. *American Economic Review*, 87(4), 545–64.

Rodil, Ó., Vence, X., and del Carmen Sánchez, M. (2016). The Relationship between Innovation and Export Behaviour: The Case of Galician Firms. *Technological Forecasting and Social Change*, 113, Part B, 248–265. https://doi.org/10.1016/j.techfore.2015.09.002

Santos, G.M.C., Marques, C.S., Ferreira, J.J., Gerry, C., and Ratten, V. (2017). Women's Entrepreneurship in Northern Portugal: Psychological Factors versus Contextual Influences in the Economic Downturn. *World Review of Entrepreneurship, Management and Sustainable Development*, 13(4), 418–440. https://doi.org/10.1504/WREMSD.2017.085027

Silva, A., Afonso, O., and Africano, A.P. (2013), Learning-by-exporting: What we know and what we would like to know. *International Trade Journal*, 26(3), 255–288. https://doi.org/10.1080/08853908.2012.682022

Tabellini, G. (2010). Culture and Institutions: Economic Development in the Regions of Europe. *Journal of the European Economic Association*, 8(4), 677–716. https://doi.org/10.1111/j.1542-4774.2010.tb00537.x

Urbano, D., and Alvarez, C. (2014). Institutional Dimensions and Entrepreneurial Activity: An International Study. *Small Business Economics*, 42(4), 703–716. https://link.springer.com/article/10.1007/s11187-013-9523-7

Van Beveren, I.. and Vandenbussche, H. (2010). Product and Process Innovation and Firms' Decision to Export. *Journal of Economic Policy Reform*, 13(1), 3–24. https://doi.org/10.1080/17487870903546267

van der Sluis, J., van Praag, M., and Vijverberg, W. (2008). Education and Entrepreneurship Selection and Performance: A Review of the Empirical Literature. *Journal of Economic Surveys*, 22(5), 795–841. https://doi.org/10.1111/j.1467-6419.2008.00550.x

Van Stel, A., Carree, M. and Thurik, A. (2005). The Effect of Entrepreneurial Activity on National Economic Growth. *Small Business Economics*, 24(3), 311–321. https://www.jstor.org/stable/40229425

Verheul, I., Carree, M., and Santarelli, E. (2009). Regional Opportunities and Policy Initiatives for New Venture Creation. *International Small Business Journal*, 27(5), 608–625. https://doi.org/10.1177/0266242609338757

Appendix Tables

Table A1: Description of individual-level variables

INDIVIDUAL-LEVEL VARIABLES (collected by the APS – Adult Population Surveys)	
CODE	DESCRIPTION
exporter	Dummy variable taking value 1 if the business has any customer abroad.
expint	Dummy variable(s) for the percentage of customers abroad (1-10%; 11-25%; 26-50%; 51-75%; 76-90%; over 90%) with None as the reference group.
jobnow	Number of jobs provided by the business in the survey year.
jobgrow	Expected job growth in 5 years as a % of current number of jobs.
newtech	Dummy variable(s) for the age of the technology used by the business (Very Latest (less than 1 year); New (1-5 years)) with Not New (>5 years) as the reference group.
newprod	Dummy variable(s) for the number of customers that consider the product new or unfamiliar (Some; All) with None as the reference group.
compete	Dummy variable(s) for the number of businesses offering the same product (Few; Many) with None as the reference group.
nowners	Number of owners of the business.
owoman	Dummy variable taking value 1 if the entrepreneur is a woman and 0 if a man.
educ	Dummy variable(s) for education levels (Some secondary; Secondary degree; Post-secondary; Graduate experience) with those with primary education or less as the reference group.
motives	Dummy variable(s) for the main reason for becoming an entrepreneur (greater independence; increase personal income; just maintain income).
knowent	Dummy variable taking value 1 if the entrepreneur knows someone who started a business in the past 2 years.
NOTE: All survey questions can be found at http://www.gemconsortium.org.	

Table A2: Descriptive statistics for individual-level variables

INDIVIDUAL-LEVEL VARIABLES					
VARIABLES	N	Mean / *cat%*	sd	min	max
expint	7,856	*1-10% (17.72%)*			
newprod	8,759	*Some (25.61%)*			
		All (16.41%)			
compete	8,759	*Few (31.19%)*			
		Many (59.46%)			
newtech	7,951	*New (17.36%)*			
		Latest (8.82%)			
educ	8,708	*Some sec (31.05%)*			
		Sec (23.68%)			
		Post sec (23.78%)			
		Grad (19.89%)			
motives	4,094	*Greater indep (51.20%)*			
		Increase income (37.40%)			
		Maintain income (11.41%)			
exporter	7,856	0.339	0.473	0	1
owoman	8,760	0.384	0.486	0	1
knowent	4,840	0.556	0.497	0	1
nowners	8,681	1.792	1.253	1	10
jobnow	5,496	3.423	27.76	0	2,000
jobgrow	8,259	351.0	1,353	-100	39,900
NOTE: All survey questions can be found at http://www.gemconsortium.org.					

Table A3: Association between individual-level covariates

	newtech	**newprod**	**compete**	**owoman**	**educ**	**motives**	**knowent**	**nowners**	**jobnow**	**jobgrow**
exporter	75.70***	183.38***	44.71***	4.28**	59.89***	6.91**	30.25***	25.99***	25.64***	20.49***
expint	116.09***	405.56***	72.73***	6.05	89.02***	22.05**	34.65***	126.39***	38.97***	41.91***
newtech		156.71***	67.18***	2.46	125.17***	25.74***	21.63***	19.56	57.42***	27.79***
newprod			695.62***	4.93*	98.56***	3.83	15.17***	52.45***	100.20***	87.62***
compete				9.05**	64.10***	13.63***	5.03*	55.47***	152.94***	92.55***
owoman					14.18***	9.22***	27.28***	11.12	10.47***	2.69
educ						36.21***	64.10***	90.49***	82.14***	113.04***
motives							3.55	27.53*	46.15***	12.53**
knowent								6.80	19.62***	32.63***
nowners									181.98***	132.47***
jobnow										1.4e+03***

NOTE: The Pearson Chi-squared tests for association between each pair of variables. Rejection of the null hypothesis of no association at the 1%, 5% or 10% significance levels is represented by ***, **, *, respectively. The *jobnow* and *jobgrow* variables were discretized at, respectively, less than 5 jobs, between 5 and 10, and more than 10 jobs, and for negative, null and positive growth.

Table A4: Description of country-level factors

COUNTRY-LEVEL FACTORS OBTAINED FROM COUNTRY-LEVEL VARIABLES (collected by the NES – National Expert Surveys)			
FACTOR	LOADING	CODE	DESCRIPTION
		TOPICA	**financial environment**
F11: Equity funding, debt funding, government subsidies	0.36908	Qa01	there is sufficient equity funding available for new and growing firms
	0.45778	Qa02	there is sufficient debt funding available for new and growing firms
	0.25488	Qa03	there are sufficient government subsidies available for new and growing firms
F12: Private funding, venture capitalist funding, IPOs funding	0.4662	Qa04	there is sufficient funding available from private individuals
	0.40565	Qa05	there is sufficient venture capitalist funding available for new and growing firms
	0.62085	Qa06	there is sufficient funding available through initial public offerings (IPOs)
		TOPICB	**government quality**
F21: National government's macroeconomic support to entrepreneurship	0.01669	Qb01	government policies (e.g., public procurement) consistently favor new firms
	0.09819	Qb02	the support for new and growing firms is a high priority for national policy-makers
	0.13734	Qb05	the amount of taxes is NOT a burden for new and growing firms
	0.07302	Qb07	coping with government bureaucracy, regulations, and licensing requirements
		TOPICC	**government support to entrepreneurship**
F22: Tax system and bureaucratic system	0.17112	Qc03	there are an adequate number of government programs for new and growing businesses
	0.12012	Qc05	almost anyone who needs help from a government program for a new or growing business can find what they need
	0.11193	Qc06	government programs aimed at supporting new and growing firms are effective
	0.43974	Qq05	supporting rapid firm growth is a high priority in entrepreneurship policies
	0.08893	Qb04	new firms can get most of the required permits and licenses within a week
	0.88588	Qb06	taxes and other government regulations are applied to new and growing firms in a predictable and consistent way
	0.05524	Qc01	a wide range of government assistance for new and growing firms can be obtained from a single agency
F23: Local government's microeconomic support to entrepreneurship	0.25819	Qb03	the support for new and growing firms is a high priority for local policy-makers
	0.37635	Qc02	science parks and business incubators provide effective support for new and growing firms
	0.17638	Qc04	the people working for government agencies are competent and effective in supporting new and growing firms
		TOPICQ	**government support to high-growth entrepreneurship**
	0.18208	Qq01	there are many support initiatives that are specially tailored for entrepreneurs
	0.04038	Qq02	policy-makers are aware of the importance of high-growth entrepreneurship
	0.07575	Qq03	people working in entrepreneurship support initiatives have sufficient support
	0.16839	Qq04	potential for rapid growth is often used as a selection criterion

Table A4 (cont.)

COUNTRY-LEVEL FACTORS OBTAINED FROM COUNTRY-LEVEL VARIABLES (collected by the NES – National Expert Surveys)			
FACTOR	LOADING	CODE	DESCRIPTION
		TOPICD	**education quality**
	0.14679	Qd01	teaching in primary and secondary education encourages creativity, self-sufficiency and personal initiative
F31: Education system	0.15568	Qd03	teaching in primary and secondary education provides adequate attention to entrepreneurship and new firm creation
	0.10878	Qd04	colleges and universities provide good and adequate preparation for entrepreneurship
	0.42058	Qd06	the vocational, professional, and continuing education systems provide good preparation for self-employment
	0.23696	Qd02	teaching in primary and secondary education provides adequate instruction in market economic principles
		TOPICL	**entrepreneurship know-how**
F32: Know-how in starting a business	0.20522	Ql01	many people know how to start and manage a high-growth business
	0.16607	Ql03	many people have experience in starting a new business
	0.37684	Ql04	many people can react quickly to good opportunities for a new business
	0.38069	Qd05	the level of business and management education provide good and adequate knowledge
F33: Know-how in managing a business	0.57691	Ql02	many people know how to start and manage a small business
	0.24449	Ql05	many people have the ability to organize the resources required for a new business
		TOPICE	**innovation transfer**
	0.19134	Qe02	new and growing firms have just as much access to new research and technology as large, established firms
	0.12275	Qe05	the science and technology base efficiently supports the creation of world-class new technology-based ventures
F41: Innovation transfer and protection	0.17339	Qe06	there is good support available for engineers and scientists to have their ideas commercialized through new and growing firms
		TOPICN	**innovation protection**
	0.00176	Qn01	the Intellectual Property Rights (IPR) legislation is comprehensive
	0.25088	Qn02	the Intellectual Property Rights (IPR) legislation is efficiently enforced
	0.09883	Qn04	new and growing firms can trust that their patents, copyrights, and trade-marks will be respected
	0.29618	Qn05	it is widely recognized that inventors' rights for their inventions should be respected
	0.52408	Qe03	new and growing firms can afford the latest technology
F42: New technology's interest and affordability	0.08198	Qe04	there are adequate government subsidies for new and growing firms to acquire new technology
		TOPICR	**innovation support**
	0.06914	Qr01	companies like to experiment with new technologies and with new ways

Table A4 (cont.)

COUNTRY-LEVEL FACTORS OBTAINED FROM COUNTRY-LEVEL VARIABLES (collected by the NES – National Expert Surveys)			
FACTOR	LOADING	CODE	DESCRIPTION
	0.16483	Qe01	new technology, science, and other knowledge are efficiently transferred from universities and public research centers to new and growing firms
F43: Innovation transfer and support	0.27313	Qr02	consumers like to try out new products and services
	0.0559	Qr03	innovation is highly valued by companies
	0.42724	Qr04	innovation is highly valued by consumers
	0.24373	Qr06	consumers are open to buying products and services from new entrepreneurs
F44: Business interest in new technology and respect for IPRs	0.32619	Qn03	the illegal sales of 'pirated' software, videos, CDs, and other copyrighted or trademarked products is not extensive
	0.34172	Qr05	established companies are open to using new, entrepreneurial companies
F51: Availability of professional business services		**TOPICF**	**business services**
	0.22422	Qf04	it is easy for new and growing firms to get good, professional legal and accounting services
	0.34867	Qf05	it is easy for new and growing firms to get good banking services
	0.36538	Qf02	new and growing firms can afford the cost of using subcontractors, suppliers and consultants
	0.05044	Qf03	it is easy for new and growing firms to get good subcontractors, suppliers and consultants
		TOPICG	**market structure**
F52: Market entry possibilities, affordability and support	0.10537	Qg01	the markets for consumer goods and services change dramatically from year to year
	0.07165	Qg02	the markets for business-to-business goods and services change dramatically from year to year
	0.23216	Qg03	new and growing firms can easily enter new markets
	0.19934	Qg04	the new and growing firms can afford the cost of market entry
	0.19004	Qg05	new and growing firms can enter markets without being unfairly blocked by established firms
	0.54681	Qf01	there are enough subcontractors, suppliers, and consultants to support new and growing firms
	0.263	Qg06	the anti-trust legislation is effective and well enforced
F53: Infrastructure affordability and support		**TOPICH**	**physical infrastructure**
	0.14397	Qh04	new and growing firms can afford the cost of basic utilities
	0.06717	Qh05	new or growing firms can get good access to utilities
F54: Infrastructure affordability and efficiency	0.1406	Qh01	the physical infrastructure provides good support for new and growing firms
	0.27004	Qh02	it is not too expensive for a new or growing firm to get good access to utilities in about a month
	0.63329	Qh03	a new or growing firm can get good access to communications in about a week

Table A4 (cont.)

COUNTRY-LEVEL FACTORS OBTAINED FROM COUNTRY-LEVEL VARIABLES (collected by the NES – National Expert Surveys)			
FACTOR	LOADING	CODE	DESCRIPTION
		TOPICI	**national culture**
	0.15029	Qi03	the national culture encourages entrepreneurial risk-taking
F61: Social support for entrepreneurial activity		**TOPICM**	**social support**
	0.23661	Qm01	the creation of new ventures is considered an appropriate way to become rich
	0.27823	Qm02	most people consider becoming an entrepreneur as a desirable career choice
	0.19408	Qm05	most people think of entrepreneurs as competent, resourceful individuals
	0.30957	Qi01	the national culture is highly supportive of individual success achieved through own personal effort
F62: National culture	0.49809	Qi02	the national culture emphasizes self-sufficiency, autonomy, and personal initiative
	0.11947	Qi05	the national culture emphasizes the responsibility that the individual has in managing their own life
	0.02131	Qi04	the national culture encourages creativity and innovativeness
F63: Social status of entrepreneurs	0.14856	Qm03	successful entrepreneurs have a high level of status and respect
	0.81079	Qm04	you will often see stories in the public media about successful entrepreneurs
		TOPICK	**entrepreneurship opportunities**
	0.16796	Qk01	there are plenty of good opportunities for the creation of new firms
F64: Entrepreneurship opportunities	0.06941	Qk02	there are more good opportunities for the creation of new firms than there are people able to take advantage of them
	0.50489	Qk03	good opportunities for new firms have considerably increased in the past five years
	0.12505	Qk04	individuals can easily pursue entrepreneurial opportunities
	0.43048	Qk05	there are plenty of good opportunities to create truly high growth firms
		TOPICP	**gender roles**
	0.16854	Qp01	there are sufficient social services available so that women can continue to work even after they start a family
F71: Social support for women as entrepreneurs	0.31985	Qp02	starting a new business is a socially acceptable career option for women
	0.66538	Qp03	women are encouraged to become self-employed or start a new business
F72: Equality of opportunities for men and women	0.57884	Qp04	men and women get equally exposed to good opportunities to start a new business
	0.54982	Qp05	men and women have the same level of knowledge and skills to start a new business

NOTE: All factors were obtained applying principal components with varimax rotation and Kaiser normalization within each NES aggregate described in the paper to facilitate interpretation. Those factors that were not significantly associated to the dependent variables before controlling for other variables were not included in the regressions. In the table, each question is assigned to the factor where it enters with the highest loading, which is also indicated on the table. All survey questions can be found at http://www.gemconsortium.org.

Table A5: Descriptive statistics for country-level factors

COUNTRY-LEVEL FACTORS					
FACTORS	N	Mean	sd	min	max
F11	6,252	1.23E-09	1.010	-1.611	1.127
F12	6,252	2.47E-09	1.002	-3.644	3.809
F21	5,368	-1.14E-08	1.001	-2.390	1.438
F22	5,368	1.58E-08	1.001	-2.900	1.089
F23	5,368	9.50E-09	1.001	-2.558	1.286
F31	6,252	8.36E-09	1.003	-1.813	2.500
F32	6,252	1.34E-08	1.001	-1.401	3.573
F33	6,252	-5.28E-09	1.003	-3.895	1.368
F41	5,448	-5.66E-09	1.001	-2.193	1.424
F42	5,448	-3.20E-09	1.003	-1.713	1.500
F43	5,448	1.41E-08	1.007	-1.911	3.520
F44	5,448	-1.14E-09	1.013	-0.925	3.351
F51	6,252	-6.47E-09	1.001	-2.206	1.737
F52	6,252	1.09E-08	1.001	-1.831	1.996
F53	6,252	8.81E-09	1.003	-2.486	1.463
F54	6,252	2.26E-10	1.005	-3.673	2.585
F61	6,252	4.73E-09	1.002	-1.215	2.915
F62	6,252	1.35E-08	1.003	-3.681	1.113
F63	6,252	1.17E-08	1.009	-2.418	2.195
F64	6,252	-6.91E-09	1.002	-3.571	2.545
F71	6,252	5.34E-09	1.009	-2.034	1.162
F72	6,252	-1.36E-09	1.002	-3.377	1.114

NOTE: All survey questions can be found at http://www.gemconsortium.org.

Table A6: Export intensity in micro businesses (0-1 jobs)

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*	(5) *expint*	(6) *expint*	(7) *expint*
jobgrow	-3.10e-05	-5.91e-05	-8.74e-05	-5.81e-05	-5.84e-05	-0.000103	-6.77e-05
	(6.32e-05)	(6.55e-05)	(7.13e-05)	(6.58e-05)	(6.49e-05)	(6.93e-05)	(6.78e-05)
newtech (New)		0.292*	0.244	0.240	0.234	0.353*	0.227
		(0.151)	(0.152)	(0.153)	(0.153)	(0.202)	(0.156)
newtech (Very Latest)		0.968***	0.892***	0.954***	0.949***	0.523	1.019***
		(0.207)	(0.211)	(0.207)	(0.206)	(0.335)	(0.207)
newprod (Some)			0.394***	0.393***	0.390***	0.427**	0.379**
			(0.146)	(0.150)	(0.150)	(0.203)	(0.151)
newprod (All)			0.723***	0.737***	0.724***	0.390	0.717***
			(0.197)	(0.203)	(0.205)	(0.315)	(0.207)
compete (Few)				0.650**	0.643**	0.379	0.631**
				(0.258)	(0.257)	(0.363)	(0.260)
compete (Many)				0.630**	0.613**	0.560	0.593**
				(0.249)	(0.249)	(0.349)	(0.252)
nowners				0.00463	0.00984	-0.0725	0.0172
				(0.0747)	(0.0751)	(0.110)	(0.0748)
owoman				-0.145	-0.153	-0.152	-0.151
				(0.131)	(0.130)	(0.171)	(0.132)
educ (Some sec)				0.170	0.163	0.143	0.115
				(0.481)	(0.483)	(0.511)	(0.489)
educ (Sec deg)				0.122	0.125	-0.0240	0.0834
				(0.488)	(0.491)	(0.515)	(0.497)
educ (Post-sec)				0.384	0.402	0.686	0.351
				(0.482)	(0.485)	(0.502)	(0.491)
educ (Grad)				0.342	0.342	0.213	0.304
				(0.502)	(0.505)	(0.549)	(0.513)
Motive (indep)					-0.0163	0.0335	-0.0232
					(0.150)	(0.198)	(0.155)
Motive (increase inc)					-0.381*	-0.426	-0.335
					(0.215)	(0.283)	(0.215)
Motive (maintain inc)					0.156	0.415	0.147
					(0.273)	(0.367)	(0.280)
knowent						0.350**	
						(0.169)	
Observations	2,446	2,179	2,179	2,161	2,161	1,264	2,161
Model F test	4.504***	4.569***	4.528***	3.773***	3.674***	24.61***	3.381***
Country*year FE	NO	NO	NO	NO	NO	NO	YES

NOTE: The regression method is ordered logit with survey weights that match the gender-age distribution of the adult population between 18-64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *expint* being the dependent variable. All regressions include country, industry and year fixed effects. Cut points are omitted but are all significant.

Table A7: Export intensity in small businesses (10-49 jobs)

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*	(5) *expint*	(6) *expint*	(7) *expint*
jobgrow	-0.000447	-0.000426	-0.000499	-0.000932	-0.000864	-0.000776	-0.000852
	(0.00248)	(0.00217)	(0.00267)	(0.00948)	(0.00886)	(0.00653)	(0.00689)
newtech (New)		-0.262	-0.276	-0.353	-0.360	-0.381	-0.488
		(0.391)	(0.402)	(0.419)	(0.416)	(0.415)	(0.460)
newtech (Very Latest)		0.437	0.412	0.346	0.340	0.521	0.452
		(1.058)	(1.010)	(1.036)	(1.013)	(0.946)	(0.869)
newprod (Some)			0.310	0.149	0.132	0.139	0.134
			(0.379)	(0.408)	(0.427)	(0.436)	(0.424)
newprod (All)			0.290	0.323	0.324	0.309	0.324
			(0.455)	(0.507)	(0.504)	(0.490)	(0.492)
compete (Few)				0.815	0.835	0.891	1.115
				(0.948)	(0.882)	(0.772)	(0.799)
compete (Many)				0.424	0.442	0.473	0.610
				(0.734)	(0.691)	(0.657)	(0.670)
nowners				0.0958	0.0959	0.141	0.126
				(0.0893)	(0.0905)	(0.0979)	(0.0932)
owoman					0.0878	0.0262	0.0236
					(0.380)	(0.400)	(0.398)
educ (Some sec)						0.509	0.428
						(0.770)	(0.826)
educ (Sec deg)						1.062	0.967
						(0.738)	(0.798)
educ (Post-sec)						0.712	0.574
						(0.781)	(0.849)
educ (Grad)						-0.0545	-0.146
						(0.875)	(0.925)
Motive (indep)							0.520
							(0.413)
Motive (increase inc)							-0.0877
							(0.434)
Motive (maintain inc)							0.190
							(0.691)
Observations	317	284	284	279	279	279	279
Model F test	24.50***	26.24***	23.89***	21.20***	20.35***	15.15***	16.33***
Country*year FE	NO	NO	NO	NO	NO	NO	NO

NOTE: The regression method is ordered logit with survey weights that match the gender-age distribution of the adult population between 18-64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *expint* being the dependent variable. All regressions include country, industry and year fixed effects. Cut points are omitted but are all significant.

Table A8: Export intensity in services

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*	(5) *expint*	(6) *expint*	(7) *expint*
jobgrow	5.09e-05**	4.22e-05*	2.85e-05	1.97e-05	1.86e-05	-1.57e-05	2.10e-05
	(2.28e-05)	(2.37e-05)	(2.33e-05)	(2.44e-05)	(2.43e-05)	(3.80e-05)	(2.43e-05)
newtech (New)		0.369***	0.299***	0.272***	0.262***	0.370***	0.248***
		(0.0838)	(0.0847)	(0.0856)	(0.0858)	(0.117)	(0.0872)
newtech (Very Latest)		0.605***	0.516***	0.514***	0.501***	0.461***	0.490***
		(0.127)	(0.130)	(0.130)	(0.130)	(0.172)	(0.131)
newprod (Some)			0.410***	0.370***	0.369***	0.343***	0.362***
			(0.0802)	(0.0832)	(0.0831)	(0.114)	(0.0837)
newprod (All)			0.857***	0.791***	0.791***	0.564***	0.790***
			(0.1000)	(0.102)	(0.102)	(0.144)	(0.103)
compete (Few)				0.165	0.168	0.00851	0.162
				(0.132)	(0.131)	(0.175)	(0.132)
compete (Many)				-0.0298	-0.0271	-0.170	-0.0356
				(0.130)	(0.130)	(0.175)	(0.130)
nowners				0.0705**	0.0730***	0.0389	0.0728***
				(0.0276)	(0.0280)	(0.0405)	(0.0280)
owoman				-0.160**	-0.168**	-0.215**	-0.166**
				(0.0730)	(0.0728)	(0.0980)	(0.0733)
educ (Some sec)				0.454	0.452	0.344	0.443
				(0.348)	(0.348)	(0.376)	(0.356)
educ (Sec deg)				0.474	0.471	0.273	0.448
				(0.347)	(0.347)	(0.374)	(0.357)
educ (Post-sec)				0.482	0.491	0.538	0.493
				(0.345)	(0.345)	(0.371)	(0.354)
educ (Grad)				0.645*	0.645*	0.570	0.622*
				(0.352)	(0.352)	(0.385)	(0.360)
Motive (indep)					-0.0553	0.0969	-0.0585
					(0.0872)	(0.118)	(0.0877)
Motive (increase inc)					-0.140	-0.183	-0.135
					(0.0966)	(0.132)	(0.0973)
Motive (maintain inc)					0.226*	0.481***	0.226
					(0.137)	(0.179)	(0.138)
knowent						0.283***	
						(0.0988)	
Observations	6,551	5,930	5,930	5,859	5,859	3,282	5,859
Model F test	10.68***	9.901***	12.24***	9.530***	9.098***	6.380***	7.690***
Country*year FE	NO	NO	NO	NO	NO	NO	YES

NOTE: The regression method is ordered logit with survey weights that match the gender-age distribution of the adult population between 18-64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *expint* being the dependent variable. All regressions include country, industry and year fixed effects. Cut points are omitted but are all significant.

Table A9: Export intensity in manufacturing

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*	(5) *expint*	(6) *expint*	(7) *expint*
jobgrow	-6.34e-05	-9.07e-05	-0.000107	-9.62e-05	-8.37e-05	1.04e-05	-6.01e-05
	(8.47e-05)	(8.78e-05)	(8.96e-05)	(8.93e-05)	(8.99e-05)	(0.000112)	(9.12e-05)
newtech (New)		0.0674	-0.0238	-0.135	-0.103	-0.000769	-0.0746
		(0.204)	(0.211)	(0.218)	(0.217)	(0.293)	(0.224)
newtech (Very Latest)		0.516	0.352	0.404	0.469	0.458	0.476
		(0.340)	(0.380)	(0.392)	(0.406)	(0.534)	(0.431)
newprod (Some)			0.487**	0.539**	0.527**	0.365	0.532**
			(0.211)	(0.212)	(0.213)	(0.289)	(0.213)
newprod (All)			0.876***	1.008***	0.982***	0.631*	0.980***
			(0.246)	(0.262)	(0.263)	(0.372)	(0.268)
compete (Few)				0.651**	0.701**	0.786*	0.646*
				(0.329)	(0.342)	(0.474)	(0.353)
compete (Many)				0.681**	0.710**	0.783*	0.668**
				(0.319)	(0.328)	(0.455)	(0.335)
nowners				0.0463	0.0282	0.00459	0.0298
				(0.0811)	(0.0839)	(0.102)	(0.0847)
owoman				0.000915	-0.0472	0.175	-0.0265
				(0.188)	(0.189)	(0.270)	(0.190)
educ (Some sec)				-0.228	-0.346	-0.466	-0.454
				(0.543)	(0.544)	(0.637)	(0.562)
educ (Sec deg)				0.0720	-0.0534	-0.247	-0.202
				(0.547)	(0.551)	(0.657)	(0.569)
educ (Post-sec)				0.102	0.00578	0.182	-0.0202
				(0.559)	(0.558)	(0.641)	(0.569)
educ (Grad)				0.291	0.223	0.323	0.0896
				(0.573)	(0.571)	(0.670)	(0.589)
Motive (indep)					-0.0691	-0.0465	-0.0964
					(0.242)	(0.320)	(0.250)
Motive (increase inc)					0.232	0.0924	0.230
					(0.273)	(0.354)	(0.279)
Motive (maintain inc)					0.720*	1.054*	0.749*
					(0.387)	(0.593)	(0.399)
knowent						-0.118	
						(0.246)	
Observations	912	857	857	848	848	479	848
Model F test	3.219***	2.446***	2.739***	2.254***	2.113***	1.556**	19.91***
Country*year FE	NO	NO	NO	NO	NO	NO	YES

NOTE: The regression method is ordered logit with survey weights that match the gender-age distribution of the adult population between 18-64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *expint* being the dependent variable. All regressions include country, industry and year fixed effects. Cut points are omitted but are all significant.

Table A10: Export intensity in nascent businesses

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*	(5) *expint*	(6) *expint*	(7) *expint*
jobgrow	4.11e-05*	3.15e-05	2.36e-05	1.49e-05	1.17e-05	-4.32e-06	1.40e-05
	(2.35e-05)	(2.41e-05)	(2.38e-05)	(2.49e-05)	(2.42e-05)	(3.51e-05)	(2.39e-05)
newtech (New)		0.377***	0.308**	0.245*	0.234*	0.345**	0.226*
		(0.125)	(0.126)	(0.128)	(0.128)	(0.170)	(0.130)
newtech (Very Latest)		0.517***	0.461***	0.423**	0.413**	0.318	0.399**
		(0.172)	(0.175)	(0.177)	(0.180)	(0.221)	(0.178)
newprod (Some)			0.401***	0.329***	0.327***	0.133	0.320***
			(0.112)	(0.117)	(0.117)	(0.150)	(0.118)
newprod (All)			0.606***	0.526***	0.528***	0.353*	0.526***
			(0.131)	(0.132)	(0.132)	(0.185)	(0.136)
compete (Few)				0.0597	0.0663	0.163	0.0452
				(0.159)	(0.159)	(0.210)	(0.161)
compete (Many)				-0.156	-0.152	-0.193	-0.171
				(0.159)	(0.160)	(0.210)	(0.161)
nowners				0.0418	0.0398	0.0112	0.0410
				(0.0383)	(0.0387)	(0.0561)	(0.0387)
owoman				-0.214**	-0.218**	-0.303**	-0.215**
				(0.105)	(0.105)	(0.141)	(0.107)
educ (Some sec)				0.176	0.149	0.0773	0.136
				(0.355)	(0.359)	(0.377)	(0.360)
educ (Sec deg)				0.386	0.344	0.0883	0.303
				(0.355)	(0.359)	(0.383)	(0.362)
educ (Post-sec)				0.413	0.384	0.474	0.405
				(0.348)	(0.352)	(0.366)	(0.351)
educ (Grad)				0.677*	0.661*	0.580	0.636*
				(0.363)	(0.366)	(0.401)	(0.366)
Motive (indep)					-0.153	0.145	-0.155
					(0.123)	(0.168)	(0.125)
Motive (increase inc)					-0.0228	-0.0190	-0.00930
					(0.133)	(0.179)	(0.134)
Motive (maintain inc)					0.354*	0.629**	0.391*
					(0.208)	(0.256)	(0.210)
knowent						0.0991	
						(0.138)	
Observations	3,225	2,947	2,947	2,906	2,906	1,643	2,906
Model F test	4.128***	3.135***	3.819***	3.583***	3.438***	2.512***	3.541***
Country*year FE	NO	NO	NO	NO	NO	NO	YES

NOTE: The regression method is ordered logit with survey weights that match the gender-age distribution of the adult population between 18-64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *expint* being the dependent variable. All regressions include country, industry and year fixed effects. Cut points are omitted but are all significant. Nascent entrepreneurs are "respondents (18-64) involved in nascent business, defined as active, expect to be a full or part owner, and no salaries or wages paid for over three months".

Table A11: Export intensity in young businesses

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*	(5) *expint*	(6) *expint*	(7) *expint*
jobgrow	3.91e-05	-1.41e-05	-8.53e-05	-4.02e-05	-4.02e-05	-4.05e-05	-4.23e-05
	(9.90e-05)	(0.000108)	(0.000124)	(0.000116)	(0.000112)	(0.000119)	(0.000114)
newtech (New)		0.293***	0.203*	0.189*	0.176*	0.235	0.150
		(0.103)	(0.105)	(0.106)	(0.107)	(0.151)	(0.109)
newtech (Very Latest)		0.689***	0.540***	0.554***	0.542***	0.497**	0.548***
		(0.168)	(0.173)	(0.173)	(0.172)	(0.241)	(0.175)
newprod (Some)			0.449***	0.432***	0.435***	0.490***	0.438***
			(0.104)	(0.107)	(0.108)	(0.152)	(0.109)
newprod (All)			1.095***	1.096***	1.101***	0.782***	1.107***
			(0.132)	(0.137)	(0.138)	(0.193)	(0.139)
compete (Few)				0.424**	0.431**	0.0694	0.426**
				(0.203)	(0.203)	(0.281)	(0.202)
compete (Many)				0.264	0.259	0.000136	0.251
				(0.197)	(0.197)	(0.279)	(0.197)
nowners				0.109***	0.111***	0.0521	0.110***
				(0.0419)	(0.0418)	(0.0534)	(0.0418)
owoman				-0.124	-0.130	-0.104	-0.135
				(0.0929)	(0.0928)	(0.127)	(0.0931)
educ (Some sec)				0.443	0.446	0.359	0.434
				(0.459)	(0.461)	(0.527)	(0.467)
educ (Sec deg)				0.371	0.377	0.209	0.360
				(0.458)	(0.460)	(0.521)	(0.467)
educ (Post-sec)				0.404	0.419	0.493	0.382
				(0.457)	(0.460)	(0.519)	(0.466)
educ (Grad)				0.465	0.469	0.431	0.455
				(0.465)	(0.467)	(0.534)	(0.473)
Motive (indep)					0.00425	-0.00180	-0.00136
					(0.110)	(0.148)	(0.111)
Motive (increase inc)					-0.151	-0.246	-0.160
					(0.127)	(0.176)	(0.128)
Motive (maintain inc)					0.191	0.499**	0.192
					(0.170)	(0.243)	(0.172)
knowent						0.372***	
						(0.125)	
Observations	4,238	3,840	3,840	3,801	3,801	2,118	3,801
Model F test	6.388***	6.405***	7.854***	6.288***	6.034***	4.302***	5.144***
Country*year FE	NO	NO	NO	NO	NO	NO	YES

NOTE: The regression method is ordered logit with survey weights that match the gender-age distribution of the adult population between 18-64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *expint* being the dependent variable. All regressions include country, industry and year fixed effects. Cut points are omitted but are all significant. Young entrepreneurs are "respondents (18-64) involved as owner and manager in new firms for which salaries or wages have been paid between 3 and 42 months".

Table A12: Export intensity in Spain

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*	(5) *expint*	(6) *expint*	(7) *expint*
jobgrow	3.99e-05*	3.69e-05	2.65e-05	2.01e-05	1.89e-05	1.75e-05	7.28e-06
	(2.20e-05)	(2.29e-05)	(2.26e-05)	(2.33e-05)	(2.30e-05)	(2.28e-05)	(3.32e-05)
newtech (New)		0.289***	0.199**	0.188**	0.172*	0.157*	0.302**
		(0.0890)	(0.0907)	(0.0912)	(0.0914)	(0.0917)	(0.124)
newtech (Very Latest)		0.587***	0.444***	0.454***	0.431***	0.427***	0.219
		(0.142)	(0.147)	(0.148)	(0.147)	(0.149)	(0.214)
newprod (Some)			0.379***	0.346***	0.352***	0.351***	0.302**
			(0.0847)	(0.0869)	(0.0876)	(0.0876)	(0.121)
newprod (All)			0.919***	0.891***	0.879***	0.879***	0.624***
			(0.100)	(0.103)	(0.103)	(0.103)	(0.149)
compete (Few)				0.197	0.193	0.204	0.0438
				(0.133)	(0.133)	(0.133)	(0.180)
compete (Many)				0.0124	0.0123	0.0217	-0.0655
				(0.131)	(0.132)	(0.131)	(0.178)
nowners				0.0788***	0.0751***	0.0779***	0.0298
				(0.0268)	(0.0270)	(0.0274)	(0.0389)
owoman				-0.159**	-0.149**	-0.157**	-0.178*
				(0.0748)	(0.0752)	(0.0750)	(0.104)
educ (Some sec)					0.366	0.357	0.220
					(0.398)	(0.398)	(0.448)
educ (Sec deg)					0.284	0.274	-0.0283
					(0.401)	(0.401)	(0.454)
educ (Post-sec)					0.419	0.424	0.511
					(0.396)	(0.396)	(0.443)
educ (Grad)					0.537	0.532	0.411
					(0.403)	(0.403)	(0.457)
Motive (indep)						-0.0844	0.113
						(0.0909)	(0.123)
Motive (increase inc)						-0.157	-0.140
						(0.102)	(0.142)
Motive (maintain inc)						0.268*	0.589***
						(0.143)	(0.196)
knowent							0.276***
							(0.103)
Observations	6,389	5,898	5,898	5,870	5,844	5,844	3,243
Model F test	4.964***	4.824***	7.148***	6.877***	6.361***	6.194***	3.651***
Country*year FE	NO	NO	NO	NO	NO	NO	NO

NOTE: The regression method is ordered logit with survey weights that match the gender-age distribution of the adult population between 18-64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *expint* being the dependent variable. All regressions include country, industry and year fixed effects. Cut points are omitted but are all significant.

Table A13: Export intensity with interactions

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*	(5) *expint*	(6) *expint*	(7) *expint*
jobgrow	-1.49e-05	-8.54e-06	-1.37e-05	-1.68e-05	-9.18e-06	-1.31e-05	-2.26e-05
	(3.65e-05)	(3.54e-05)	(3.76e-05)	(3.50e-05)	(3.80e-05)	(3.77e-05)	(3.67e-05)
newtech (New)	-0.527	0.577***	0.263*	0.324***	0.339***	0.324***	
	(0.400)	(0.183)	(0.154)	(0.109)	(0.110)	(0.109)	
newtech (Very Latest)	0.0101	0.774***	0.128	0.443***	0.451***	0.447***	
	(0.560)	(0.239)	(0.225)	(0.158)	(0.159)	(0.160)	
newprod (Some)	0.330***	0.334***	0.332***	0.173	1.594**	0.197	0.409***
	(0.107)	(0.107)	(0.107)	(0.179)	(0.757)	(0.155)	(0.105)
newprod (All)	0.562***	0.561***	0.564***	0.102	-1.101	0.349*	0.660***
	(0.133)	(0.133)	(0.133)	(0.207)	(1.193)	(0.187)	(0.129)
compete (Few)	-0.186	0.106	0.0845	0.104	0.121	0.0786	0.523**
	(0.182)	(0.164)	(0.164)	(0.165)	(0.166)	(0.167)	(0.226)
compete (Many)	-0.263	-0.0643	-0.0884	-0.0545	-0.0457	-0.0806	0.223
	(0.179)	(0.163)	(0.164)	(0.164)	(0.164)	(0.165)	(0.223)
nowners	0.0323	0.0813*	0.0307	-0.0530	0.0351	0.0334	0.197***
	(0.0372)	(0.0446)	(0.0380)	(0.0551)	(0.0376)	(0.0380)	(0.0723)
owoman	-0.158*	-0.168*	-0.169*	-0.165*	-0.162*	-0.171*	-0.208**
	(0.0919)	(0.0924)	(0.0927)	(0.0923)	(0.0926)	(0.0927)	(0.0903)
educ (Some sec)	0.291	0.292	0.265	0.286	0.365	0.299	0.309
	(0.330)	(0.328)	(0.327)	(0.325)	(0.374)	(0.328)	(0.332)
educ (Sec deg)	0.246	0.242	0.219	0.243	0.588	0.251	0.220
	(0.329)	(0.328)	(0.327)	(0.324)	(0.373)	(0.328)	(0.332)
educ (Post-sec)	0.543*	0.530	0.521	0.530*	0.915**	0.547*	0.571*
	(0.326)	(0.325)	(0.323)	(0.321)	(0.368)	(0.325)	(0.328)

Table A13 (cont.)

VARIABLES		(1) *expint*		(2) *expint*		(3) *expint*		(4) *expint*		(5) *expint*		(6) *expint*		(7) *expint*
educ (Grad)		0.554		0.551		0.536		0.566*		0.685*		0.564*		0.585*
		(0.339)		(0.339)		(0.338)		(0.335)		(0.388)		(0.338)		(0.343)
Motive (indep)		0.0785		0.0850		0.0558		0.0862		0.0951		-0.0892		0.0763
		(0.111)		(0.111)		(0.135)		(0.111)		(0.112)		(0.150)		(0.112)
Motive (increase inc)		-0.134		-0.130		-0.286*		-0.142		-0.129		-0.236		-0.149
		(0.125)		(0.124)		(0.152)		(0.124)		(0.124)		(0.168)		(0.124)
Motive (maintain inc)		0.527***		0.547***		0.462**		0.548***		0.546***		0.468*		0.559***
		(0.167)		(0.168)		(0.214)		(0.170)		(0.174)		(0.242)		(0.173)
knowent		0.235**		0.241***		0.238***		0.237***		0.246***		0.248***		0.236***
		(0.0917)		(0.0917)		(0.0921)		(0.0915)		(0.0928)		(0.0916)		(0.0882)
INTERACTIONS	2.newtech #2.compete	1.127***	2.newtech #c.nowners	-0.141*	2.newtech #motive1	0.0199	2.newprod #c.nowners	0.0921	2.newprod #111.gemeduc	-0.968	2.newprod #motive1	0.203	2.compete #c.nowners	-0.235***
		(0.431)		(0.0849)		(0.260)		(0.0834)		(0.785)		(0.254)		(0.0880)
	2.newtech #3.compete	0.791*	3.newtech #c.nowners	-0.196*	3.newtech #motive1	0.309	3.newprod #c.nowners	0.253***	2.newprod #1212.gemeduc	-1.482*	3.newprod #motive1	0.702**	3.compete #c.nowners	-0.167*
		(0.429)		(0.108)		(0.386)		(0.0894)		(0.784)		(0.315)		(0.0902)
	3.newtech #2.compete	0.475			2.newtech #motive2	0.317			2.newprod #1316.gemeduc	-1.532**	2.newprod #motive2	0.322		
		(0.611)				(0.312)				(0.780)		(0.282)		
	3.newtech #3.compete	0.491			3.newtech #motive2	0.907**			2.newprod #1720.gemeduc	-1.183	3.newprod #motive2	0.0754		
		(0.595)				(0.424)				(0.788)		(0.349)		
					2.newtech #motive3	0.0655			3.newprod #111.gemeduc	2.125*	2.newprod #motive3	0.244		
						(0.376)				(1.228)		(0.400)		
					3.newtech #motive3	0.546			3.newprod #1212.gemeduc	1.325	3.newprod #motive3	0.0627		
						(0.551)				(1.217)		(0.422)		

Table A13 (cont.)

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*		(5) *expint*	(6) *expint*	(7) *expint*
					3.newprod #1316.gemeduc	1.133		
						(1.212)		
					3.newprod #1720.gemeduc	2.055*		
						(1.216)		
Observations	3,761	3,761	3,761	3,761		3,761	3,761	4,095
Model F test	5.121***	5.420***	4.919***	5.479***		4.978***	4.981***	6.080***
Country*year FE	NO	NO	NO	NO	NO	NO	NO	NO

NOTE: The regression method is ordered logit with survey weights that match the gender-age distribution of the adult population between 18-64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *expint* being the dependent variable. All regressions include country, industry and year fixed effects. Cut points are omitted but are all significant.

Table A14: Export intensity using zero-inflated probit

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*	(5) *expint*	(6) *expint*	(7) *expint*	(8) *expint*	(9) *expint*	(10) *expint*
jobgrow	1.62e-06	1.98e-05	1.51e-05	1.38e-05	-1.38e-06	1.61e-05	-3.44e-06	-1.27e-06	-2.28e-06	1.41e-05
	(1.72e-05)	(1.43e-05)	(1.38e-05)	(1.38e-05)	(2.10e-05)	(1.46e-05)	(1.80e-05)	(1.76e-05)	(1.67e-05)	(1.23e-05)
newtech (New)			0.116**	0.115**	0.195***	0.102**	0.183***	0.181***	0.180***	0.0951**
			(0.0478)	(0.0479)	(0.0701)	(0.0508)	(0.0643)	(0.0650)	(0.0638)	(0.0474)
newtech (Very Latest)			0.315***	0.318***	0.294***	0.321***	0.253***	0.242***	0.258***	0.285***
			(0.0751)	(0.0751)	(0.106)	(0.0821)	(0.0922)	(0.0932)	(0.0917)	(0.0719)
newprod (Some)			0.236***	0.238***	0.234***	0.251***	0.205***	0.198***	0.204***	0.233***
			(0.0474)	(0.0475)	(0.0720)	(0.0521)	(0.0631)	(0.0637)	(0.0623)	(0.0462)
newprod (All)			0.547***	0.552***	0.455***	0.586***	0.394***	0.390***	0.391***	0.542***
			(0.0604)	(0.0604)	(0.0977)	(0.0722)	(0.0794)	(0.0799)	(0.0793)	(0.0574)
compete (Few)	0.0962	0.120	0.143*	0.142*	0.0828	0.145*	0.0715	0.0757	0.0739	0.130*
	(0.0985)	(0.0793)	(0.0734)	(0.0732)	(0.101)	(0.0773)	(0.0943)	(0.0946)	(0.0934)	(0.0720)
compete (Many)	-0.0162	0.0128	0.0516	0.0504	0.000766	0.0497	-0.0132	-0.00833	-0.0127	0.0364
	(0.0990)	(0.0796)	(0.0725)	(0.0723)	(0.101)	(0.0769)	(0.0934)	(0.0939)	(0.0925)	(0.0713)
nowners	0.0296	0.0478***	0.0379**	0.0377**	0.0256	0.0413**	0.0235	0.0225		
	(0.0229)	(0.0180)	(0.0152)	(0.0152)	(0.0229)	(0.0161)	(0.0210)	(0.0212)		
owoman	-0.109*	-0.0923**		-0.0895**	-0.105*	-0.0918**	-0.107**	-0.105*		
	(0.0593)	(0.0463)		(0.0410)	(0.0593)	(0.0434)	(0.0540)	(0.0545)		
educ (Some sec)	0.164	0.223			0.213	0.205	0.173	0.156	0.170	0.188
	(0.210)	(0.198)			(0.202)	(0.187)	(0.195)	(0.198)	(0.191)	(0.177)
educ (Sec deg)	0.130	0.247			0.167	0.220	0.129	0.0988	0.134	0.203
	(0.210)	(0.198)			(0.201)	(0.187)	(0.194)	(0.199)	(0.190)	(0.177)
educ (Post-sec)	0.309	0.284			0.346*	0.251	0.305	0.312	0.307	0.236
	(0.208)	(0.196)			(0.200)	(0.185)	(0.193)	(0.196)	(0.189)	(0.176)
educ (Grad)	0.301	0.354*			0.325	0.306	0.299	0.276	0.296	0.301*
	(0.217)	(0.201)			(0.209)	(0.190)	(0.201)	(0.204)	(0.197)	(0.180)

Table A14 (cont.)

VARIABLES		(1) *expint*	(2) *expint*		(3) *expint*	(4) *expint*		(5) *expint*	(6) *expint*		(7) *expint*	(8) *expint*		(9) *expint*	(10) *expint*
Motive (indep)		0.0691	-0.00304								0.0502	0.0498		0.0534	-0.0220
		(0.0707)	(0.0559)								(0.0650)	(0.0654)		(0.0639)	(0.0486)
Motive (increase inc)		-0.0386	0.000437								-0.0587	-0.0507		-0.0562	-0.0384
		(0.0789)	(0.0611)								(0.0721)	(0.0723)		(0.0712)	(0.0524)
Motive (maintain inc)		0.366***	0.205**								0.324***	0.333***		0.322***	0.167**
		(0.110)	(0.0839)								(0.102)	(0.103)		(0.0999)	(0.0762)
knowent		0.141**						0.134**							
		(0.0591)						(0.0592)							
INFLATION VAR															
	newtech (New)	1.187*	0.693***	educ (Some sec)	0.486	0.488	Motive (indep)	0.111	-0.129	knowent	3.858***	3.932***	nowners	-0.0608	0.469
		(0.671)	(0.202)		(0.482)	(0.485)		(0.227)	(0.197)		(0.261)	(0.254)		(0.137)	(0.462)
	newtech (Very Latest)	4.122	0.710**	educ (Sec deg)	0.905	0.887	Motive (increase inc)	-0.289	-0.276				owoman	-3.576**	-4.072***
		(5.516)	(0.278)		(0.560)	(0.556)		(0.221)	(0.219)					(1.508)	(0.392)
	newprod (Some)	0.319	0.438***	educ (Post-sec)	1.074	1.055	Motive (maintain inc)	4.382***	3.917***						
		(0.204)	(0.122)		(0.666)	(0.655)		(0.345)	(0.340)						
	newprod (All)	4.528***	4.829***	educ (Grad)	4.285***	4.427***									
		(0.474)	(0.447)		(0.595)	(0.574)									
Observations		3,761	6,707		6,707	6,707		3,761	6,707		3,761	3,761		3,761	6,707
Model F test		4.392***	4.563***		9.015***	9.155***		5.835***	7.377***		5.601***	5.155***		6.078***	7.736***
Country*year FE		NO	YES		NO	NO		NO	YES		NO	YES		NO	YES

NOTE: The regression method is zero-inflated probit with survey weights that match the gender-age distribution of the adult population between 18-64 years in each country-year pair. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *expint* being the dependent variable. All regressions include country, industry and year fixed effects. Cut points are omitted but are all significant.

Table A15: Country distribution of businesses

	Spain		Greece		Italy		Portugal	
	N	%	N	%	N	%	N	%
2003-2010	7,268	82.97	955	10.90	384	4.38	153	1.75
2011-2015	105,933	81.48	10,000	7.69	6,052	4.66	8,024	6.17

Table A16: Descriptive statistics for individual-level variables in 2011–2015

INDIVIDUAL-LEVEL VARIABLES					
VARIABLES	N	Mean / *cat%*	sd	min	max
expint	5,928	*<25% (22.71%)*			
newprod	6,297	*Some (22.19%)* *All (13.94%)*			
compete	6,297	*Few (35.78%)* *Many (53.57%)*			
newtech	6,297	*New (20.07%)* *Latest (13.10%)*			
motives	6,103	*Greater indep (16.57%)* *Increase income (21.94%)* *Opportunity-necessity mix (27.27%)*			
nowners	6,297	1.767	1.294	1	10
jobnow	3,543	1.629	0.693	1	4
jobgrow	6,165	4.141	35.735	-300	2,000

NOTE: All survey questions can be found at http://www.gemconsortium.org.

Table A17: Export intensity in 2011–2015

VARIABLES	(1) *expint*	(2) *expint*	(3) *expint*	(4) *expint*	(5) *expint*	(6) *expint*	(7) *expint*
jobgrow	0.00868***	0.00837***	0.00751***	0.00744***	0.00629***	0.00623***	0.00613***
	(0.00164)	(0.00159)	(0.00153)	(0.00152)	(0.00142)	(0.00140)	(0.00141)
newtech (New)		0.243***	0.129*	0.126*	0.114	0.0961	0.0992
		(0.0711)	(0.0729)	(0.0731)	(0.0733)	(0.0742)	(0.0744)
newtech (Very Latest)		0.297***	0.172**	0.161*	0.135	0.110	0.135
		(0.0856)	(0.0876)	(0.0878)	(0.0882)	(0.0899)	(0.0901)
newprod (Some)			0.403***	0.379***	0.355***	0.322***	0.323***
			(0.0707)	(0.0727)	(0.0730)	(0.0744)	(0.0746)
newprod (All)			0.551***	0.506***	0.508***	0.472***	0.466***
			(0.0861)	(0.0897)	(0.0900)	(0.0915)	(0.0917)
compete (Few)				-0.120	-0.0861	-0.0551	-0.0747
				(0.102)	(0.102)	(0.104)	(0.104)
compete (Many)				-0.180*	-0.135	-0.0937	-0.106
				(0.102)	(0.103)	(0.105)	(0.105)
nowners					0.143***	0.140***	0.136***
					(0.0206)	(0.0211)	(0.0212)
Motive (increase inc)						0.309***	0.317***
						(0.0799)	(0.0801)
Motive (indep)						0.231***	0.249***
						(0.0885)	(0.0889)
Motive (opportunity-necessity mix)						0.100	0.0946
						(0.0768)	(0.0770)
Observations	5,727	5,727	5,727	5,727	5,727	5,562	5,562
Country*year FE	NO	NO	NO	NO	NO	NO	YES

NOTE: The regression method is ordered logit. Standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1. The definitions of all variables are provided in Appendix Table A1, with *expint* being the dependent variable. All regressions include country, industry and year fixed effects. Cut points are omitted but are all significant.