INTERNATIONALIZATION AND PERFORMANCE OF THE ITALIAN AUTOMOTIVE SUPPLY CHAIN: EVIDENCE FOR DESIGNING POLICIES

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Abstract

The debate on the relationship between internationalization and performance is still open and is a hot topic for policymakers who promote specific policies, but ignore the real results for most of the firms supported. Differently from previous literature, the paper is based on a large and original database on a period of seven years that considers quantitative-qualitative and control variables. To reduce industry and country heterogeneity we focused on the Italian automotive supply chain. Our contribution is to provide results partially in contrast with other internationalization/performance theories or models. In particular, we identify subsamples of firms where internationalization policies could be more effective.

Keywords: internationalization, performance, internationalization policies

1. Introduction

The increasing fragmentation of production process foster an explosive growth of the international trade of parts and components in many industries (Kimura and Ando, 2005; Sturgeon and Van Biesebroeck, 2011; Daszkiewicz and Wach, 2012) reshaping the value created from local to global chains (Chiarvesio et alli, 2010; Warwick, 2013). Internationalization of firms is commonly recognized as a key factor for economic growth and industrial competitiveness in the globalizing era (UNCTAD, 2013) and, consequently, is objective of many public policy initiatives, in particular for small and medium sized firms (Acs et al., 1997; Wright et al., 2007; Lee et al., 2012). However, the potential economic outcomes of such policy interventions are unknown for the high uncertainty on the relationship between internationalization and profits.

Coherently, the impact of internationalization policies is not clear, even if it has been analysed by many empirical studies, with divergent opinions on the efficacy of such measures (Bannò and Piscitello, 2010; Yülek, 2015). In fact, internationalization policies are not good "per se" and not all firms are worthwhile to be supported, or at least, the expected advantages are different. The typology of firm to be supported should be carefully considered in order to maximize the potential economic effect of policy intervention. The main characteristics firms like size, localization, ownership, previous expertise on international market, credit scoring and position in the global value chain can strongly mediate the effect of policies (Fisher and Reuber, 2003).

Previous research treats only marginally this aspect and many national or regional measures have been defined based on international skills (i.e. supporting intention of to internationalize or fostering internationalization already in act) rather than in respect to firms characteristics. Common policy programs, generally extended to SMEs, include the diffusion of information about foreign markets, the assistance in contacting brokers or agents, the provision of voucher for participating at international trade exhibitions, the financial assistance such as trade credits or loans, and special

incentives such as contributions toward the initial costs of new products (Fisher and Reuber, 2003). On the contrary, the global value chain theory suggests policies affecting cost saving (production, service link and network-set-up) and resource scarcity are major barriers for internationalization in particular for SMEs' (Gereffi et al., 2005; Tang, 2011); while other interventions are specifically designed for attracting of foreign direct investment (FDI; Chowdhury and Mavrotas, 2006; Blonigen, B. A., 2005). Exporting and FDI are the two main dimensions of internationalization, plus foreign ownership and networking. Literature has generally focused only on one or two of these modes of internationalization (Lu and Beamish; 2006) or trying to calculate the degree of internationalization. One of the main contributions of this paper is to analyse the joint influences of all these activities on firms' profitability and test internationalization/performance theories on a large database. Moreover, we have considered international outsourcing as a dimension of internationalization. In particular, for SMEs, some scholars have found that most of them start the internationalization process on the sourcing side rather than exporting (Di Gregorio et al., 2009).

This paper contributes to this debate by considering the prerequisite for designing good policies: for maximizing the potential outcome concentrate resources where the relation between internationalization and performance is stronger. Policy makers, before designing policies, need to know the actual performance of foreign activities (Papadopoulos and Martín, 2010), but also if the mode of internationalization have a significant impact on firms (Lages and Lages, 2004; Sousa, 2004). Such aspect can differ systematically for subgroups of firms and for specific environment, in particular regarding firms' size and localization. In particular, we specifically consider the kind of internationalization with relation to potential economic performance as well as the main characteristics of the firm.

Our empirical strategy is based on different regression models with many controls for catching firms' specificities, while size and the socioeconomic environment have been considered through sub-sampling. We focus on the automotive industry because it is characterized by a high fragmentation of the production and strong relation with international markets (Sturgeon et al., 2008; Frigant, 2013), with the presence of a global integration between buyers and suppliers, exports and FDI (Jullien and Pardi; 2013; Chanaron, 2013). Moreover, we analyse the Italian automotive sector for the availability of large scale qualitative data on ownership, FDI and export. The original database is characterised by a large number of small and medium firms as well as by local plants of large multinational companies (Calabrese, 2011).

The remainder of the paper is structured as follow. Section 2 reports the most relevant literature; section 3 describes our empirical strategy while section 4 describes our data and variable used. The main results are reported in section 5 and conclusions have been drawn in the last section.

2. Literature and hypotheses

2.1 Internationalization policies

Literature has pinpointed three main theoretical streams to analyse the internationalization of domestic-based firms and the consequent implications on

industrial policy in particular for SMEs: the stage approach¹, the network approach and the international entrepreneurship theory. This section briefly examines the three approaches and shows the Italian policies for internationalization.

According to Lim and Kimura (2010), the three approaches are theoretical and distinct but some interrelations exist suggesting that harmonizing the different approaches can help guide analyses of firm internationalization (Lloyd-Reason *et al.* 2005; Etemad and Wright 2003). All three approaches state that market knowledge is a fundamental driver of international expansion, although they attribute the acquisition of it to different sources (Lim and Kimura, 2010). The common framework is the participation of firms in the global value chains and not a generic increase of the international operations.

The automotive industry is somewhat paradigmatic of this organisational change (Balcet and Consoni, 2007; Humphrey and Memedovic, 2003; Quadros and Consoni, 2009; Sturgeon et al., 2008; Castelli *et al.* 2011). Until the mid-1980s, the automotive sector was described as a flat hierarchy (Fujimoto, 1999). Following Womack, Jones and Roos (1990), the Toyota or lean supply chain management has been widely considered as the best practice (Alaez-Aller & Longas-Garcia, 2010) and highly superior to the alternative modes of supply chain management.

Nowadays the automotive value chain is mostly organised according to a multi-tier supply chain (Calabrese and Manello, 2015) and for a SME, it is generally easier to enter as a lower-tier supplier even if unstable due to competition is based on price and suppliers can be easily replaced (Abonyi, 2005; Volpato and Stocchetti, 2007). Therefore, the challenge is to be part of GVCs, to scale the tiers, to become irreplaceable and unique by increasing the value content of the activities.

The stage approach explains internationalization as an incremental and logical process (Luostarinen 1994). Firms start selling in the domestic market and then sequentially sell abroad. A virtuous and expansionary cycle begins thanks to the mutual interdependency between the learning by doing in the foreign markets and the internal business decisions and activities. The process can be described as "a gradual acquisition, integration and use of knowledge about foreign markets and operations and a successively increasing commitment to foreign markets" (Johanson and Vahlne 1977).

Two main models can be identified. The Product Life Cycle Theory by Vernon that was revised several times in the identification of the differences among developed countries, (Vernon 1966; 1971; 1979). The Uppsala Internationalization Model (Johanson and Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977, 1990) that pays more attention on the distance perception of the new markets, which is the sum of differences in languages, cultures, political systems.

Hence, according to the stage approach, national and regional policies can play a triggering role by promoting initiatives to increase firm knowledge of foreign markets and their engagement to sell abroad. The first set of measures is the provision of information services and explaining the benefits and costs of internationalization.

¹ The born global approach is considered an evolution of the stage approach (Madsen and Servais, 1997), but in this case, the government intervention regards more macroeconomic than industrial policies. That is: falling trade barriers, deregulations and privatizations, faster information flows, improved communication and transportation networks, free movement of capital goods, services, and people, and so on (Rasmussen & Madsen, 2002)

Secondly, the persuaded firms have to be facilitated with measures able, for instance, to reduce entry barriers and lower the cost of international expansion, avoiding one-off activities. Finally, public institutions can facilitate language learning or hiring more staff for international positions.

New technologies and globalization have affected the internationalization process theorised by the stage approach, in particular the increasing number of the so-called born global firms (Oviatt and McDougall, 1997). The next two models try to better deal with the current situation.

In the network approach, internationalization is the natural consequence of the management of relationships with all the actors in a business (Johansson and Mattson 1988). According to the basis of the relationship, Perry (2012) classified four types of networks: personal and ethnic ties (social networks); geographical proximity (industrial districts); organizational integration (joint ventures and alliances); buyer-supplier linkages (supply chains). A firm network of both local and abroad relationships is fundamental for creating trust, obtaining market knowledge, increasing the firm capability to collect resources and searching for opportunities (Mohibul and Fernandez, 2008).

Johansson and Mattson (1988) argue that as the firm internationalises, the number and strength of the relationships between different parts of the business network increases and helping them integrate further into GVCs.

The Uppsala internationalization process model was revised twofold in the light of the network approach (Johanson and Vahlne, 2009): markets are networks of relationships in which firms are linked to each other in various patterns; relationships offer potential for learning and for building commitment, both of which are preconditions for internationalization (Daszkiewicz and Wach, 2012).

Favouring the development of relationships and linkages within domestic and foreign firms is a fundamental policy to encourage firm internationalization. National and regional governments can, for example, assist firms in discovering foreign partners or promote mentoring projects connecting firms with international experience and inexperienced firms. In this context, policymakers have to encourage informal cooperation between large and SMEs so to reduce the perception of the loss of independence and to circumvent barriers to entry in international market.

Finally, international entrepreneurship theory (IET) represents a compromise between the two extremes of stage approach, whose primary focus is on firm (mainly multinational enterprise) that has slow progression to international markets, and network theory, whose focus is on a very rapidly internationalization of the SMEs (Mtigwe, 2006). IET states that individual and firm entrepreneurial behaviour is the basis of foreign market entry through a formal network or without the aid of a formal network (Oviatt and McDougall, 2005).

Thanks to the current age of technology, new international entrepreneurs tend to be more innovative, more capable in finding and enacting opportunities and more influenced by the leader (owner/founder/CEO) in understanding international new ventures (Brush, 1995; Karagozoglu and Martin, 1998; Oviatt and McDougall 2005). This is not limited to small firms because large companies often show the same entrepreneurial behaviours (Zahra and George, 2002).

Some scholars argue that the entrepreneurial qualities of leaders are relevant in particular in the early phases. However, as the internationalization rises, it gains more

knowledge and so the characteristics of the firm begin to put forth more influence (Etemad and Wright 2003).

In this context, national and regional policies should consider the promotion of entrepreneurism by disseminating best business internationalization practices, as well as fostering and supporting firms to explore new technologies.

2.2 Performance, internationalization strategy and hypotheses

From a conceptual point of view, a range of alternatives has substituted the traditional distinction between export and FDI, as the two main dimensions of internationalization. Thus, the internationalization expansion of firms may range from exports to non-equity and equity agreements, abroad or domestic, to FDI, and entails diverse levels of involvement and risk (Majocchi and Zucchella, 2003). With the aim to analyse the impacts on performance, our panel includes variables as export (export to turnover), interfirm non-equity agreements (if the firm is a part of a network), equity agreements (intensity of FDI) and if the firm is controlled by foreign owners. Some authors (Ruigrok and Wagner, 2003; Hennart, 2007; Contractor, 2007) summarized these dimensions with the term of the degree of internationalization (DOI)² mostly in relation to multinationality and hardly to adapt to our large panel with domestic financial data.

However, internationalization does not concern only sales but purchases as well. In literature, many indicators of international outsourcing have been defined. In this paper, like Feenstra and Hanson (1996), we have utilised the ratio between imported inputs and total inputs. This index better shows the firm strategies about the purchase of intermediates goods abroad on the total (Breda and Cappariello, 2010). Others indices regard the import inputs on total production (Egger and Egger, 2003), Import inputs on total export (Hummels et al., 2001) and the share of domestic value added on production (Sinn, 2006).

There is large agreement that performance is made of different components, economic and strategic, but it is measured in very different ways.

The most common measures include: traditional accounting-based ratios (Ruigrok and Wagner, 2003; Lu and Beamish, 2004; Majocchi and Zucchella, 2003; Papadopoulos and Martín, 2010; Calabrese and Erbetta, 2005) such as return on assets (ROA), return on investment (ROI), return on equity and pretax profitability (ROE), profit margin, cash flow; labour productivity or other direct measures (Manello et al., 2016; Arvanitis and Loukis, 2012; Sousa, 2004) such as technical efficiency, innovation performance, market share and sales growth. Indirect measures of performance are less diffused and consider: incremental and radical innovation (Li *et al.* 2008); product and process innovation (Nieto and Rodriguez 2011); performance rating by customers (Novak and Stern 2008); organizational quality (Hult et al., 2008). Some scholars consider also a mix of direct and indirect measures (Bardhan *et al.* 2006; Kamyabi and Devi 2011).

A main distinction regards overall performance that refers to the total outcomes and export performance that refers the activities abroad. The latter requires being

² According to Contractor (2007) «measures for DOI have ranged from a simple count of numbers of national markets the firm serves, to "Foreign Sales to Total Sales" (FSTS) or "Foreign Employees to Total Employees" or "Foreign Subsidiaries to Total Subsidiaries" or "Foreign Assets to Total Assets" (FATA) – to more complicated measures such as Herfindahl like indexes of geographical dispersion.»

collected firm by firm. The large panel and the chance to have available financial statements for all the period analysed referred us to the former and, as consequence, we have selected profitability ratios as measure of performance. In particular, this is pertinent to the aim of the paper due to the financial statement concerns no consolidated data, that is only the Italian business on which national and regional taxes are calculated.

We have defined five hypotheses, each for mode of internationalization, so to test the prevalent relationship with profitability detected in literature (Table 1). Some scholars authors examined that the various forms of internationalisation have a different impact on firm profitability (Lu and Beamish, 2006; Glaum and Oesterle, 2007; Majocchi and Zucchella, 2003).

(Table 1 here)

In literature the relationship between internationalization and growth is largely convincing (Glaum and Oesterle, 2007; Love and Roper, 2015), the effect on profitability remain still ambiguous (Sullivan, 1994; Lu and Beamish, 2006). Larger volumes of sale by exporting should enable firms to achieve economies of scale and scope and, as consequence, increase labour productivity, management efficiency, cost saving and profitability. Other indirect benefits should regard learning through experience by exploiting tangible and intangible resources in a wider and more competitive market (Kogut, 1985; Ramaswamy, 1992; Giachetti 2012). Nevertheless, Majocchi and Zucchella (2003) do not find a positive correlation between firm profitability and export intensity. Besides, Lu and Beamish (2006) find that exporting activity has a negative impact on profitability.

The effect of FDi on firm profitability is a more complex matter. The benefits are similar of exporting but the time-lag is different and unwelcome results can be especially stiff for SMEs when first moving abroad (Love and Roper, 2015). On the contrary, multinational firms have the chance to distribute their assets better and strengthen their competitive position by exploiting cross-border activities (Bausch and Krist, 2007). In addition to the economies of scale and scope, benefits arise from portfolio diversification and risk return performance (Ruigrok and Wagner, 2003), whereas governance and transaction costs could increase exponentially if the complexity of foreign operation is not efficiently coordinated (Giachetti, 2012). In the past, positive (Haar, 1989) and negative (Kumar, 1984) linear relationship have been detected. Some findings have pointed out the existence of a non monotonic relationship but scholars diverge on the shape of the curve (Ruigrok and Wagner, 2003). A second-order and a third-order term for the FDI intensity, or more generally for DOI, have been proposed highlighting inverted-J curve, standard-U curve or inverted-U curve (Majocchi and Zucchella, 2003; Papadopoulos and Martin, 2010). According to the 3-stage general theory, linear and non linear curves are simply parts of the overall S-curve (Contractor, 2007). The S-curve can have a negative (positive) slope at low levels of internationalization, positive (negative) at medium levels of internationalization, and negative (positive) at high levels of internationalization (Lu and Beamish, 2004; Giachetti, 2012). In the case of our study, a peculiar aspect regards the use of domestic data for profitability, whereas in general the analysis should consider consolidated financial statements for all the subsidiaries throughout the

world. A negative impact is expected due Italian tax system is less favourable for firms than abroad.

In addition, foreign ownership has an unclear relationship with profitability manly for the country location of the controlled firm. The emphasis on firm-specific assets has stimulated many analyses to investigate if foreign owned firms perform better than domestically controlled firms do. The accumulation of specific competitive advantages, not accessible to domestic firms, encourages firms to invest abroad (Wright et al., 2007). The control of tangible and non tangible assets should compensate for the costs of doing business abroad. Nevertheless, empirical evidence is not homogeneous, even if in literature the positive impact of foreign ownership on firms' profitability generally prevails. According to Barbosa and Louri (2005) the discriminating factor is the level of country development: surely positive in firms operating in developing countries (Boardman et al., 1997); with some exceptions in developed countries (Driffield and Girma, 2003).

As described in the former section, networking is a broad concept and range from formal relationships to informal agreements (non-equity agreements, strategic alliances, consortium; network contracts; buyer-supplier linkages, industrial district and social groups). In formal networks firms, and in particular SMEs, can share and reduce costs and risks; pool their resources and capabilities; obtain complementary resources in terms of knowledge and capital; improve learning; and as a consequence increase competitiveness and profitability (BarNir and Snith, 2002; Mohibul and Fernandez, 2008; Fernhaber and Li, 2013). In 2009, in Italy the parliament introduced the network contracts designed to support inter-firm cooperation and improve innovation and competitiveness. Network contract are freely defined and the law implies the set-up of a common entity and the settlement of specific functioning rules.

Finally, as far as outsourcing is concerned, Lahiri (2015) reviewed 57 empirical papers over two decades. 24 papers denotes that outsourcing can produce positive or moderate impact on the profitability of the firm, 22 papers mixed effects, 4 papers negative result and 7 papers no significant effect. Highly skilled and/or low-cost workers are not the mai reasons for international outsourcing, both large MNEs and smaller companies are moving sourcing towards countries with specific specializations lacking at home (Di Gregorio et al., 2009; Breda and Cappariello, 2010).

2.3 The Italian context

The Italian Constitution establishes that Regions have exclusive competence in the field of productive activities and concurs with the State in matters of foreign trade and innovation support for productive sectors. The State defines the fundamental principles and has exclusive responsibility for tax policy and matters of international relations.

A multi-level governance that integrates public and private institutional, economic and non-economic carries out policies for internationalization. The first level is the "control room" for internationalization and involves five ministries with specific skills (MISE-Ministry of Economic Development; MEF-Ministry of Economy and Finances; MAECI-Ministry of Foreign Affairs and International Cooperation; MIPAAF- Ministry of Agricultural, Food and Forestry Policies; MIBACT-Ministry of Cultural Heritage and Activities and Tourism), the conference of Regions, the Chambers of Commerce, the Italian Chambers of Commerce abroad, the business associations. The second level includes the instrumental bodies like the limited companies SACE³ and SIMEST⁴ both controlled by CDP⁵ and the ICE⁶ agency under the supervision of MISE.

In Italy, industrial policy is poorly considered. According to Eurostat, Italy allocates the lowest percentage of GDP between the EU countries, only 0.2% compared to 0.4 of Germany and 0.6 of France. In 2013 the total funds distributed were 2.2 € billions, 70% less compared to 2002 (Brancati, 2015). In spite of this strong reduction, the funds distributed for internationalization increased of 26% in the same period and now represent the 12.6% of the total amount (3.0% in 2002). On average, 40% of the funds come from the Regions, 30% from the State, 15% from EU and the remainder from the Chambers of Commerce and other bodies (Conferenza delle Regioni, 2015).

The Italian institutions adopt all the initiatives for internationalization suggested by the literature with some overlapping between national and regional policies. The central government is more concerned with the stage approach, between others, in reducing entry barriers and lowering the cost of international expansion through the measures of SIMEST and SACE (aids for exports investments abroad, entrance programs in foreign markets, increase the risk capital, politic risk insurance and market window) and the network approach by MISE (contributions to international consortium for promotional activities). The regional governments are more focused on the IET approach to promote aggregation processes for internationalization through support for enterprise networks and encourage the internationalization of start-ups and in particular of the new technology-based firms. Nevertheless, the initiative more activated is the promotion of the fair system as a platform for the internationalization of the supply chains⁷.

³ SACE was established in 1977 following the Law 227/77 as *Special Section for Export Credit Insurance* of National Insurance Institute. With the Legislative Decree 143/98 becomes *Institute for Foreign Trade Insurance Services*, later became a public economic body. In 2004, Law 326/2003 (Article 6) becomes *LLC* (with effect from January 1, 2004). SACE offers a complex range of instruments for credit insurance, investment protection, the provision of sureties and financial guarantees.

⁴ SIMEST was set up in 1991 to promote foreign investment by Italian companies and to provide technical and financial support for investment projects. Its private-sector shareholders include banks and trade associations. SIMEST can acquire up to 49% of the equity capital of foreign firms, both directly and through a Venture Capital Fund, to support foreign investment in countries outside the European Union. Its participation also gives the Italian company making the investment access to interest rate support for loans granted to finance its equity interest in the non-EU company.

⁵ Cassa Depositi e Prestiti (CDP) is an Italian bank founded in 1850. It was constituted in its current form as a joint-stock company on 12 December 2003. 80.1% of the share capital is owned by MEF, the 18.4% is held by various banking foundations, while the remaining 1.5% in treasury shares. The activities of the company are divided into two distinct branches of business. The first, called "separate management", manages the financing of investment and other public bodies, such as regions, other local bodies and structures relating to the State, using postal savings deposits as the main source of funds. The second, called "ordinary management", deals with the financing of works, plants, networks and equipment intended for the supply of public services and redevelopment. The activity of the company is subject to monitoring by a Parliamentary committee.

⁶ ICE (Italian Institute for Foreign Trade) was established in 1926 by a Royal Decree with the main task of promoting the development of exports of agricultural and manufacturing products. It suffered various transformations and nowadays ICE task is to facilitate, develop and promote Italian economic and trade relations with foreign countries - with particular attention to the needs of SMEs, of their consortiums and groupings - and work to develop the ' internationalization of Italian companies and the marketing of Italian goods and services in international markets.

⁷ According to Conferenza delle Regioni (2015) the participation in international fairs affects the total

3. Methodology and empirical strategy

To empirically test our hypotheses, we consider the following regression model:

$$ROI_i = \alpha + \beta INT_i + \delta Z_i + \eta D_t + \varepsilon_i$$
(1)

where ROI_i represents the measure of performance Return on Investment and INT_i is a vector of firm-level information on the international activities of each firm. Such vector collect information on all the different strategy of internationalization pursued by the firm, which correspond to our 5 hypotheses reported in table 1. First, export intensity, computed as the share of export on revenues, its squared and cubed term to catch eventual non-linearities. Second, foreign direct investment (FDI) computed as the number of production plants around the world under the direct control of the firms, its squared and cubed term to control for the intensity of FDI. Third, foreign ownership, a dummy that indicates if the firm is part of a multinational group with the headquarter located abroad. Forth, networking, a dummy indicated if the firms is member of a network contract. Fifth, international outsourcing Z_i is a vector of firmlevel controls, including standard indicators used to explain performance (Nickell et al. , 1997), such as firm size, size squared, credit scoring capital intensity and degree of vertical integration. Dt is a vector of firm-specific dummies (i.e. family firms, Tier1 or tier2 suppliers) aimed at catching macroeconomic determinants of performance. The last part of the equation, $\epsilon_{it},$ indicates a purely white noise error term. Regional and year specific fixed effects have also been included in the model for reducing heterogeneity among firms operating in different contexts.

Our empirical strategy is based on the estimation of equation (1) for the whole sample and for different subsamples in order to understand the relationship between each specific internationalization strategy and profitability, following different models specification in order to test the robustness of the results. The main aspects of interest are the coefficients for variables identifying different internationalization strategies and their relationship with performance, in the full sample and for each subsample.

4. Data

Our analysis is based on an original database given by merging economic-financial data from financial reports and qualitative data from the web or from other sources. Official statistics cannot show a complete picture of the automotive sector due to the heterogeneity of the product and the complexity of the industries. Even if a firm supply only the automotive sector, it could not be considered in the NACE code 29 which gathers who manufactures motor vehicles, trailers and semi-trailers. That is, the suppliers of the components in metal, plastic, rubber, textile, glass and of electrical and electronic equipment and are not part of NACE 29, but they are largely dedicated to the automotive industry. For this reason, we started by merging the databases which detect all firms working in prevalence for automotive developed by different Italian research groups (Bardi and Calabrese 2007; Zirpoli *et al.*, 2012; Enrietti *et al.*, 2001; Calabrese, 2002).

number of initiatives with a percentage equal to 38.5% (with nearly 654 initiatives promoted) followed by trainings (15.1%) and workshops (12.6%).

The resulting quantitative sample collecting financial data represents a picture of the Italian automotive supply chain with 2,115 companies. Balance sheet information are drawn from the AIDA database by Bureu van Dijk for the financial data, ownership and abroad subsidiaries. We integrate this source with international trade data at firm level coming from the ISTAT-COEWEB dataset that collects information for import/export activities for each Italian firms. Moreover, we use information on firms' networking activities from INFOCAMERE data (see Cisi *et al.* 2016 for the matching procedure), while the remaining information on the supply chain position and the location of headquarters has been drawn from the web.

4.1 Variables used in the analysis

First of all, the different internationalization strategies (5, according to table 1) and control variables are described in table 2. FDI_intensity adopts Lu and Beamish (2004) method⁸. To test the 3-stage general theory and the S-curve, the variable FDI_intensity have been squared and cubed. We have made the same for Export_intensity so the hypothesis 1 has been modified (new H1). We have paid attention in particular on these two variables for their importance and we have tested their mutually exclusive and joint influence on firm profitability with 9 models so to be also more confident in the comparison of the coefficients on the relevance of the independent variables of internationalization.

(Table 2 here)

We have introduced a variety of control variables to filter out their influence on firm profitability: size, credit scores, family ownership and two related industrial variables that is the positioning in the automotive supply chain and the geographical location. Size and location were clustered in order to replicate the regressions so to be more confident on the robustness of the results of the aggregate model and detect more outlooks for policymaking.

We have controlled for firm size, which is measured as the logarithm of turnover. Firm size is considered a good proxy of firm's physical/financial resources and positively correlated in supporting internationalization (Bausch and Krist, 2007), but large firms may incur greater coordination costs which could negatively affect the strategies of diversification (Lien, 2013). To avoid this ambiguous effect and control economies and diseconomies of scale size has been squared. The clustering was based according to the European Commission classification in small, medium and the remaining as large firm.

We have controlled for credit scores, a synthetic indicator of financial health commonly used in the business sector, have been computed for each year using the CNR-Ceris software, developed by Falavigna (2012) on the basis of neural network tools⁹. Our indicator of financial health is more complete in comparison to those used

⁸ They first counted the number of abroad subsidiaries and the number of countries covered. Secondly, they divided each of the two counts by the related maximum so to change them from counts to ratios. Finally, they reckoned the average of the two ratios.

⁹ The main novelty introduced by this approach is the possibility of calculating ratings for large samples of firms characterized by a limited number of variables, which can be easily drawn from balance sheet. This is not possible with standard rating instruments, which require a lot of information, not available

by standard literature on firm's survival that normally uses financial Leverage (Clementi and Hopenhayn, 2006), or other indicators like the relative weight of tangible assets on total assets (Bridges and Guariglia, 2008). Credit scores is expected to be positively related to firm profitability because low risk of insolvency induce to run profitable investments (Guay, 1999; Manello *et al.*, 2015).

We have controlled for family ownership. The existing literature is controversial on family business. Lien (2013) finds that the impact of internationalization on firm profitability is stronger for family firms than for nonfamily firms due to they face less severe Type I agency problems (Jensen and Meckling 1976). Moreover, family firms should better monitor processes and access to information, and support risk taking in internationalization (Aldrich and Cliff, 2003). Many other analyses show the opposite results. Family firms start the internationalization process later due to they tend to have a more confined culture and generally employ managers without international experience (Graves and Thomas, 2006). Family firms are coded 1. The use of a dummy variable for identifying foreign ownership was used by Fernandez and Nieto (2006) and Cerrato and Piva (2010).

We have controlled for the positioning of the firm in the automotive value chain according to the kind of product: tyre 1 (suppliers of modules and components), tyre 2 (suppliers of parts) and tyre 3 (supplier of materials). The external economies coming from the involvement in supply chains can afford greater efficiency (Gereffi et al., 2005; Sturgeon et al., 2008; Nikabadi and Shahrabi, 2015) in terms of productivity and profitability, especially when they are able to upgrade (Giovanetti et al., 2013a) and influencing survival as well (Manello and Calabrese, forthcoming). Suppliers of materials were the residual in the basic model and the other two suppliers were dummied.

Finally we have controlled for geographical location. Automotive suppliers located in the North of Italy are nearest to the main European carmakers plants, mainly located in Germany and France. Firm located in a more favourable context can take more advantage of it (Giovannetti et al., 2013b). The location in the North of Italy could favour informal network relationship and, somehow, considered in the list of the internationalization variables.

In table 3 we report the correlation matrix and some descriptive statistics for all the variables included in the empirical model.

The descriptive statistics show in the second column the percentage of firms: that export (76.8%), with at least 1 foreign subsidiaries (17.6%) and import (69.5%). The automotive suppliers controlled by a foreign firms are 11.8% and by a family (63.9%). Only networking is low represented (3.3%). As it was expected, the correlation matrix reveals that there is high correlation only between the dummies for the positioning in the supply chain. In general, regression diagnostics did not indicate problems of multicollinearity for the averaged data.

(Table 3 here)

5. Results and comments

for small and micro firms.

Table 4 shows the results of the regression analysis of the 5 modes of internationalization on firm profitability: nine models are gathered in blocks of three with the inclusion of additional squared and cubed variables in the case of only exporting (models 1-2-3), only FDI (models 4-5-6) and the joint influence of them (models 7-8-9). The inclusion of the additional variables significantly improved the model fit in each block and a test of the joint significance was verified in all models. Hence, the 3-stage general theory and the S-curve for the internationalization and profitability link were confirmed not only for FDI (hypothesis 2) but also for exporting (new hypothesis 1): the linear terms are always negative and highly significant; the square terms are always positive and highly significant; the cubed terms are always negative and highly significant. We have tested our hypothesis also in sub-samples if Export_intensity and FDI_intensity were greater than zero, but the results were similar.

The highly significant results for the foreign ownership variable in all models confirm that in a highly developed country, like Italy, being controlled by a foreign multinational imposes additional costs and reduce profits (hypothesis 3). In spite of literature, the networking variable is always negative, but never significant so hypothesis 4 is not supported. On the contrary, the international outsourcing variable is always positively signed and significant in model 3 and in particular in model 9 were exporting and FDI are jointly considered. Our results support the positive leg in the international outsourcing debate as described by hypothesis 5.

The control variables confirm the evidence in the literature for size and credit score. Size is positively correlated with profitability, but diseconomies of scale could occur up to a certain threshold. The variables size and size squared are always highly significant, but the former is always positive and the latter is always negative. In the case of Credit score, the coefficients are always positive and highly significant, and they vary just a bit among the 9 models. Our empirical findings support the longer positive impact of internationalization on firm profitability for family than for nonfamily firms. The coefficients are always positive and highly significant. The positioning in the value chain does not highlight difference between suppliers of modules and components and supplier of parts. Both coefficients are always positive and highly significant and very similar, that is there is not advantages in upscaling the value chain. Only the localization in the North of Italy is never significant, but also in this case always positive.

A deeper analysis is possible for exporting and FDI by drawing the two S-curves and resetting the other variables and the constant. In this way, the intercept is equal to zero and the result of the movement on the x-axis, Export_intensity in figure 1 and FDI_intensity in figure 2, detects the variation of ROI, whereas the coefficients come from model 3, 6 and 9 in table 4. Two main findings arise.

Firstly, the S-curves are very similar where the two modes of internationalization are jointly considered (model 9) or not, only exporting in model 3 and only FDI in model 6. This confirms that exporting and FDI are not mutually exclusive as pointed out by Lu and Beamish (2006).

Secondly, the variation of ROI is always negative as far as both intensities are higher than 0. Moreover, only in the case of exporting the positive effect at the medium level is noticeable, even if lower than 0 intensity. The main evidence is that both strategies of internationalization have a negative impact on the domestic financial statements. If the result for FDI was expected, because the Italian tax system favours firms to move assets abroad, for exporting we expected a positive variation of ROI at least for the medium level of intensity ad described by the stage approach.

For measures in supporting export, the outlook changes from peaking the winners or the losers in peaking only losers. Policymakers have to decide if focusing on the negative slope at low levels of export intensity so to support firms at the beginning of the internationalization process in overcoming the minimum value (about 30%) or focusing on the positive slope (up 80%) so to partly counterbalance the negative effect of exporting.

Table 4, figures 1 and 2 here

5.1 Focus on exporting

In section 2.3 we pointed out that in Italy policies for internationalization are exclusively up to Regions and exporting is the major area of policy intervention. In particular, for SMEs the geographic diversification begins with exporting and the limitation of resources and capabilities prevents them from investing abroad (Johanson and Vahlne 1977; Gereffi et al., 2005; Tang, 2011). Moreover, for SMEs exporting is a key mode to accumulate experience for displaying their capabilities and building networks needed for further growth through establishing FDI (LU and Beamish, 2006).

Due to in the European Union only small and medium firms can be supported by industrial policies to avoid distortion, in this section, we layered the database by location and size so to infer different coefficients. Indeed, we expect different slopes of the exporting S-curve as in table 4 the coefficients of the dummy location are consistent, even if are not significant, and the variable size is significant and positive but the squared version is negative.

The new step of the research strategy is to compare the model of the aggregate database (model 9) with smaller samples. Firstly, the database was divided by location clusters, firm located in Northern regions (Model 10) or in other regions (Model 11), and by size clusters: small firms (Model 12), medium firms (Model 13) and large firms (Model 14). Secondly, the database was divided by the interaction of location and size clusters: small firms (Model 15), medium firms (Model 16) and large firms (Model 17) in Northern regions and small firms (Model 18), medium firms (Model 19) and large firms (Model 20) in other regions. In addition, regional cluster were performed but the results are either similar or compromised by scarce observations.

Table 5 shows the results of the new models and in bold are reported the coefficients with a different sign in comparison with model 9.

The main discordances regard FDI_intensity and networking. For FDI the same signs and significance are only for large firms located in the North of Italy, in the case of networking the coefficient is still not significant but turns into positive above all for medium firms in both location clusters. About control variables only the positioning in the supply chain, and in a few of clusters, detects differences with model 9.

The drawing of the exporting S-curves points out some interesting peculiarities.

Firstly, the shapes showed in the figures 3, 4, 5 and 6 are similar and the 3-stage general theory is confirmed: apart large firms in both location clusters the linear terms are always negative and highly significant; the square terms are always positive and

highly significant; the cubed terms are always negative and highly significant. We deduce that exporting is more suitable for SMEs.

Secondly, the variation of ROI turns into positive for the medium firms and in particular for the one located in the centre-south of Italy (Export_intensity higher than 47%) and barely in the North (Export_intensity higher than 77%). Moreover, medium firms perform better than small firms do in both location clusters. We deduce that policymaker should select more medium firms than small firms in supporting export.

As the accountability requirement of any public intervention in the economy is the payback of the public funds with the taxes coming from the related increase of the gross domestic product, namely benefits higher than costs. Basically, the logical approach is that public aids should provoke better performance with regards no intervention and it would be contradictory if the public support induces negative revenues.

Apart from preferring medium firms to small firms, policymakers can also take inspiration, in designing policy for exporting, from the other variables of the model, better if significant. That is, in the Northern region they could favour more medium firms with higher credit score, family owned and not controlled by foreigners, linked in a network and importing. In the other Italian Regions, they could favour more medium firms with higher credit score and suppliers of parts, nonfamily owned and not controlled by foreigners, linked in a network link higher credit score and suppliers of parts, nonfamily owned and not controlled by foreigners, linked in a network and importing.

(Table 5: and figures 3 4 5 and 6 here)

6. Conclusions

Before of all, it should be stressed that this paper has three main limitations. The first one is the fact that our empirical results were derived from a sample of Italian firms and the second one is the firms are suppliers of the automotive industry. As a consequence the findings might be both country and industry specific even if the focus on only one country and industry allowed us to avoid market imperfections due to countries and industries differ along many variables.

The last limitation is that financial data are related to the Italian balance sheet, for this reason we used exporting instead of foreign sales, turnover and ROI are related to the Italian plants and subsidiaries. On the other hand, our investigation is based on a large sample of firms with detailed information about internationalization and specific characteristics.

In spite of these limitations, the contribution of our paper is twofold.

Firstly, we contributed to literature analysing the joint influences of all modes of internationalization on firms' profitability and tested internationalization/performance theories on a large database. Our results partially contrast internationalization theories, namely the effects of exporting and networking on profitability. The drawing of the S-curves for FDI and exporting added new research perspectives and the introduction of control variables confirmed the influence of size, credit score and family ownership on firm profitability.

Secondly, we paid attention on exporting as the major area of policy intervention for the positive evaluation on the local economy by governments. The clustering of the database by location and size highlighted some useful peculiarities for policymakers so to better select which firms are worthwhile to be supported and better address the nowadays-limited resources. The recommendation is that the beneficiary can be differently identified region by region so to optimize the impact of policies.

Policies to encourage exporting can varies from export promotion expenditure, to collecting information on foreign markets, to building distribution networks and so on. In particular, SMEs associate most of these expenditures to sunk costs and make them reluctant in exporting (Wright et al., 2007). The types of grants that can be available to firms include capital grants, training grants, rent subsidies, employment grants, and feasibility study grants. To counterbalance sunk costs, policymakers can also emphasize the potential learning benefits from internationalization experience. A factor to be considered is the size of the grants. According to Görg and al. (2008), only large grants can encourage already exporting firms to compete on the international market, but the same measure does not encourage non-exporters to start exporting.

Finally, another aspect to be considered for both further researches and policymaking is the positive effect of international outsourcing on profitability and the interaction with exporting. Manufacturing countries are gradually turning into a bazaar economy that is supplying with a broad range of products acquired in the world (Sinn, 2006) in order to exploit advantages related to labour and other production costs.

The possible gains regard not only the creation of jobs in the transforming and assembly phases, but mainly qualified jobs in designing, engineering, marketing and the other services concerned with products.

Italy can further increase this role and thus confirm its traditional role of manufacturer country.

Table 1: Five hypothesis of modes of internationalization and the relationship onprofitability

н	Type of internationalization	Effects on profitability	Main review of the literature			
1.	Exporting	Contradictory	LU and Beamish (2006)			
2.	FDI	3 stage theory and S-curve	Bausch and Krist (2007)			
3.	Foreign ownership	Positive in developing countries Negative in developed countries	Barbosa and Louri (2005)			
4.	Networking	Generally positive	Fernhaber and Li (2013)			
5.	International outsourcing	Generally positive	Lahiri (2015)			

Table 2: Description of the variables included in the models

Variables	Туре	Description
Export_intensity	Numerical	Export sales to total national sales
FDI_intensity	Numerical	See description in footnote 8.
Foreign ownership	Dummy	1 if the global ultimate owner is a foreigner as defined by AIDA database
Networking	Dummy	1 if the firms signed a network contract
International outsourcing	Numerical	Import purchases to total costs
Size	Numerical	Ln of total turnover
Credit score	Numerical	Computed by the CNR-Ceris software
Family ownership	Dummy	1 if the firms is family owned as defined in the AIDA database ¹⁰
Tyre 1 supplier	Dummy	1 if firm supplies modules and components
Tyre 2 supplier	Dummy	1 if firm supplies parts
Location	Dummy	1 if firm is located in the North of Italy

Table 3: Descriptive statistics and correlations

Va	riables	% firms>0	Mean	s.d.	ROI	1	2	3	4	5	6	7	8	9	10
	ROI	73.2	0.006	2.355											
1	Export_intensity	76.8	0.338	0.355	0,00										
2	FDI_intensity	17.6	0.012	0.050	-0.05*	0.15*									
3	Foreign ownership	11.8			-0.03*	0.08*	0.03*								
4	Networking	3.3			-0,02	0.02*	0.17*	-0.03*							
5	International outsourcing	69.5	0.223	0.321	0,01	0.39*	0.11*	0.30*	-0.01*						
6	Size	Small 66.9 Medium 24.3 Large 8.9	15.449	1.678	0,01	0.42*	0.35*	0.35*	0.10*	0.43*					
7	Credit score	At least rating A 64.6	0.732	0.203	0.39*	0.03*	0,00	0.06*	-0,01	0.04*	0.10*				
8	Family ownership	63.9			0.02*	-0.18*	-0.17*	-0.38*	-0.03*	-0.19*	-0.45*	-0.06*			
9	Tyre 1 supplier	24.3			-0.03*	0.05*	0.13*	0.26*	0,01	0.15*	0.21*	-0.04*	-0.20*		
10	Tyre 2 supplier	70.1			0.04*	-0.06*	-0.13*	-0.30*	-0,01	-0.20*	-0.26*	0.02*	0.22*	-0.86*	
11	Location	85.2			0.02*	0.15*	0.03*	0,02	-0.10*	0.06*	0,01	0.02*	0.03*	0,00	0,01
-1-															

* p<0.05

¹⁰ As defined by the AIDA database: "Besides single private individuals or families, shareholders designated by more than one named individual or families are in this category. The idea behind this is that they would probably exert their voting power together. Besides single private individuals or families, shareholders designated by more than one named individual or families are in this category. The idea behind this is that they would probably exert their voting power together.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Export intensity	-0.00672**	-0.0792***	-0.206***				-0.00642**	-0.0796***	-0.214***
export_intensity	(0.0354)	(0)	(0)				(0.0443)	(0)	(0)
Export_intensity		0.0884***	0.487***					0.0904***	0.511***
squared		(0)	(0)					(0)	(0)
Export_intensity			-0.299***						-0.316***
cubed			(0)						(0)
FDL intensity				-0.0673***	-0.128***	-0.192***	-0.0666***	-0.131***	-0.214***
FDI_Intensity				(2.46e-09)	(1.39e-08)	(1.75e-08)	(3.45e-09)	(1.12e-08)	(1.36e-09)
FDI_intensity					0.117***	0.464***		0.119***	0.481***
squared					(0.00407)	(0.000409)		(0.00365)	(0.000404)
FDI_intensity						-0.353***			-0.331**
cubed						(0.00443)			(0.0101)
Foreign	-0.00852***	-0.00954***	-0.00969***	-0.0101***	-0.0104***	-0.0108***	-0.0106***	-0.0120***	-0.0127***
ownership	(0.00444)	(0.00144)	(0.00118)	(0.000864)	(0.000578)	(0.000360)	(0.000540)	(8.47e-05)	(3.10e-05)
Notworking	-0.00322	-0.00264	-0.00305	-0.000651	-0.00101	-0.000574	-0.000685	-0.000305	-0.000316
Networking	(0.292)	(0.389)	(0.323)	(0.832)	(0.743)	(0.852)	(0.823)	(0.921)	(0.919)
International	0.00653	0.00529	0.00859**	0.00506	0.00545	0.00551	0.00684	0.00574	0.00926**
outsourcing	(0.129)	(0.219)	(0.0458)	(0.228)	(0.195)	(0.190)	(0.112)	(0.182)	(0.0310)
Sizo	0.0531***	0.0585***	0.0640***	0.0428***	0.0432***	0.0423***	0.0442***	0.0494***	0.0539***
5120	(0)	(0)	(0)	(2.22e-07)	(1.66e-07)	(2.88e-07)	(9.52e-08)	(2.31e-09)	(8.90e-11)
Size	-0.00170***	-0.00183***	-0.00199***	-0.00136***	-0.00136***	-0.00133***	-0.00139***	-0.00151***	-0.00163***
squared	(0)	(0)	(0)	(1.52e-07)	(1.28e-07)	(2.51e-07)	(8.12e-08)	(5.53e-09)	(3.14e-10)
Credit	0.224***	0.223***	0.222***	0.223***	0.223***	0.223***	0.223***	0.223***	0.221***
Score	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Family	0.00583***	0.00643***	0.00681***	0.00565***	0.00548***	0.00527***	0.00548***	0.00593***	0.00608***
ownership	(0.000632)	(0.000162)	(6.35e-05)	(0.000940)	(0.00135)	(0.00212)	(0.00133)	(0.000517)	(0.000379)
Tyre 1	0.0141***	0.0131***	0.0121***	0.0149***	0.0151***	0.0153***	0.0151***	0.0143***	0.0135***
suppliers	(0.000506)	(0.00127)	(0.00281)	(0.000255)	(0.000209)	(0.000166)	(0.000212)	(0.000464)	(0.000870)
Tyre 2	0.0139***	0.0131***	0.0128***	0.0142***	0.0143***	0.0145***	0.0146***	0.0139***	0.0137***
suppliers	(0.000309)	(0.000689)	(0.000940)	(0.000214)	(0.000195)	(0.000163)	(0.000153)	(0.000333)	(0.000391)
Location	0.0256	0.0273	0.0297	0.0252	0.0256	0.0259	0.0258	0.0279	0.0308
	(0.347)	(0.316)	(0.275)	(0.353)	(0.345)	(0.339)	(0.342)	(0.305)	(0.257)
Regional fixed effect	Yes								
Year fixed effect	Yes								
Constant	-0.570***	-0.617***	-0.662***	-0.494***	-0.499***	-0.493***	-0.507***	-0.554***	-0.593***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Observations	13,176	13,176	13,176	13,176	13,176	13,176	13,176	13,176	13,176
R-squared	0.192	0.196	0.200	0.193	0.193	0.193	0.193	0.198	0.202

Table 4: Regression ar	alysis of firm	n internationalization o	n profitab	oility (2008-2014)
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 Robust pval in parentheses
 *** p<0.01, ** p<0.05, * p<0.1</td>

Variables	All firms	All firms		All firms			Northern regions			Other Italian regions		
	All IIIIIs	Northern regions	Other regions	Small firms	Medium firms	Large firms	Small firms	Medium firms	Large firms	Small firms	Medium firms	Large firms
	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18	Model 19	Model 20
Export intensity	-0.214***	-0.218***	-0.222***	-0.189***	-0.126***	-0.108*	-0.191***	-0.136***	-0.0957	-0.181***	-0.208**	-0.495**
Export_intensity	(0)	(0)	(7.15e-06)	(0)	(0.000325)	(0.0763)	(0)	(0.000916)	(0.140)	(0.00347)	(0.0176)	(0.0162)
Export_intensity	0.511***	0.513***	0.564***	0.475***	0.342***	0.214	0.484***	0.353***	0.201	0.435**	0.602**	0.890*
squared	(0)	(0)	(0.000161)	(1.51e-10)	(0.000199)	(0.177)	(1.39e-09)	(0.000640)	(0.234)	(0.0158)	(0.0352)	(0.0903)
Export_intensity	-0.316***	-0.316***	-0.332***	-0.308***	-0.219***	-0.120	-0.314***	-0.229***	-0.118	-0.279**	-0.341	-0.409
cubed	(0)	(0)	(0.00355)	(4.66e-08)	(0.000860)	(0.270)	(2.24e-07)	(0.00153)	(0.310)	(0.0335)	(0.129)	(0.234)
EDL intensity	-0.214***	-0.231***	0.0679	0.471**	-0.0100	-0.216***	0.322	0.0315	-0.217***	1.604	0.346	0.540
PDI_IIItensity	(1.36e-09)	(9.27e-10)	(0.639)	(0.0236)	(0.906)	(0.000776)	(0.135)	(0.732)	(0.00153)	(0.153)	(0.420)	(0.348)
FDI_intensity	0.481***	0.516***	-0.671	-8.684**	-1.548**	0.657***	-4.803	-1.796**	0.628***	-26.51	-9.612	-2.826
squared	(0.000404)	(0.000514)	(0.373)	(0.0193)	(0.0239)	(0.00195)	(0.201)	(0.0147)	(0.00611)	(0.456)	(0.232)	(0.353)
FDI_intensity	-0.331**	-0.352**	0.984	23.26*	3.356***	-0.590***	7.855	3.682***	-0.553***	22.24	37.22	3.231
cubed	(0.0101)	(0.0111)	(0.298)	(0.0921)	(0.00442)	(0.000903)	(0.573)	(0.00339)	(0.00366)	(0.933)	(0.240)	(0.375)
Foreign	-0.0127***	-0.0122***	-0.0219**	-0.00147	-0.00429	-0.0237***	-0.00386	-0.00204	-0.0211***	0.0208	-0.0240*	-0.0715***
ownership	(3.10e-05)	(0.000179)	(0.0128)	(0.811)	(0.354)	(1.40e-05)	(0.550)	(0.679)	(0.000293)	(0.323)	(0.0513)	(0.00165)
Networking	-0.000316	-0.00327	0.00111	-0.00123	0.00376	0.00405	-0.00391	0.00262	0.00316	0.00126	0.00709	-0.0450*
Networking	(0.919)	(0.403)	(0.848)	(0.824)	(0.459)	(0.427)	(0.576)	(0.688)	(0.568)	(0.879)	(0.559)	(0.0951)
International	0.00926**	0.00689	0.0334***	0.0175***	0.00606	0.0287***	0.0160**	0.00343	0.0341***	0.0356**	0.0246	-0.0140
outsourcing	(0.0310)	(0.133)	(0.00447)	(0.00578)	(0.329)	(0.00338)	(0.0192)	(0.602)	(0.000751)	(0.0143)	(0.171)	(0.706)
Sizo	0.0539***	0.0569***	0.0410**									
5126	(8.90e-11)	(1.37e-09)	(0.0236)									
Size	-0.00163***	-0.00170***	-0.00136**									
squared	(3.14e-10)	(5.85e-09)	(0.0176)									
Credit	0.221***	0.229***	0.163***	0.213***	0.235***	0.265***	0.226***	0.238***	0.247***	0.132***	0.204***	0.398***
Score	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5.02e-11)
Family	0.00608***	0.00570***	0.00580	0.00419	0.00260	0.00475	0.00234	0.00504*	0.00307	0.0154***	-0.0215***	0.0375*
ownership	(0.000379)	(0.00225)	(0.188)	(0.113)	(0.326)	(0.291)	(0.431)	(0.0753)	(0.512)	(0.00654)	(0.00118)	(0.0885)
Tyre 1	0.0135***	0.0138***	0.0108	0.0294***	-0.0130**	0.0211***	0.0345***	-0.0201***	0.0159**	-0.000101	0.0195	0.0469***
suppliers	(0.000870)	(0.00212)	(0.283)	(3.29e-05)	(0.0470)	(0.00124)	(5.98e-06)	(0.00795)	(0.0279)	(0.996)	(0.110)	(0.000654)
Tyre 2	0.0137***	0.0122***	0.0202*	0.0228***	0.000371	0.0187***	0.0250***	-0.00515	0.0154**	0.0127	0.0309***	0.0552
suppliers	(0.000391)	(0.00362)	(0.0562)	(0.000628)	(0.951)	(0.00748)	(0.000473)	(0.458)	(0.0407)	(0.488)	(0.00899)	(0.178)
Location	0.0308			0.0569**	0.00985	0.0860*						
	(0.257)			(0.0217)	(0.571)	(0.0576)						
Regional fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.593***	-0.607***	-0.442***	-0.169***	-0.100***	-0.175***	-0.161***	-0.110***	-0.206***	-0.137***	-0.0804***	-0.244***
	(0)	(0)	(0.00259)	(0)	(0)	(0.000265)	(0)	(1.23e-10)	(0)	(0.000414)	(0.00169)	(9.63e-05)
Observations	13,176	11,271	1,905	8,102	3,655	1,419	6,891	3,123	1,257	1,211	532	162
R-squared	0.202	0.208	0.177	0.181	0.251	0.310	0.192	0.250	0.278	0.136	0.354	0.640

 Table 5: Regression analysis of firm performance (ROI) on internationalization (2008-2014)

Robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Figure 1: Export intensity and profitability



Figure 2: FDI intensity and profitability





Figure 3: Export intensity and performance (all firms)

Figure 5 and: Export intensity and performance (Northern regions)





Figure 4: Export intensity and performance (all firms)

Figure 6 : Export intensity and performance (Other Italian regions)



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