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The Role of Export-Driven New Ventures in Economic Growth: A Cross-Country Analysis

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Abstract: We investigate the relationship between a country's prevalence of new ventures and its rate of economic growth, while distinguishing between *export-oriented new ventures* and *domestic new ventures*. It is generally acknowledged that new venture creation as well as export activity may both be important strategies for achieving national economic growth. However, to our knowledge no attempt has been made to empirically investigate the role of export-driven new ventures in economic growth. We focus on the national level and use data from the Global Entrepreneurship Monitor for a sample of 36 countries. Our results suggest that a country's prevalence of export-driven new ventures is significantly positively related to economic growth, whereas the prevalence of new ventures that focus exclusively on domestic market sales shows no significant relation to national growth.

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1. Introduction

This paper investigates the relationship between a country's prevalence of new ventures and its rate of economic growth, while making a distinction between export-oriented new ventures and domestic new ventures (new ventures that focus exclusively on generating sales in the domestic market). We aim to contribute to three streams of literature: (1) the literature on export and economic growth, (2) the literature on entrepreneurship, in terms of new venture creation, and economic growth and (3) the literature on new venture internationalization and growth.

First, we aim to contribute to literature on export and economic growth by examining the role of export-oriented new ventures in economic growth. Export revenues play an important role in achieving economic growth in both low income and high income countries. It is a stylized fact that on average exporting firms perform better than non-exporting firms, in particular they tend to be more productive, more capital intensive and more innovative (Girma et al., 2004; Kneller & Pisu, 2007). However, previous research with respect to the importance of export for national economies has strongly focused on established corporations and large multinational enterprises and has paid less attention to the role of start-ups in international markets (Audretsch & Thurik, 2000). In this study we attempt to address this gap by examining the relationship between a country's prevalence of export-oriented new ventures and national economic growth.

Second, it is our aim to contribute to literature on new venture creation and economic growth by making a distinction between different types of new ventures (export-oriented new ventures and domestic new ventures). Entrepreneurship in terms of new venture creation is considered an important mechanism of economic development (Schumpeter 1934; Wennekers & Thurik 1999; Baumol, 2002; Carree & Thurik, 2003) and for developing competitive economies (Hawkins, 1993). Audretsch & Keilbach (2004) argue, based on empirical studies as well as theoretical arguments, that entrepreneurship contributes to economic growth through knowledge spillovers, increased competition and increased diversity. In particular, entrepreneurs contribute to a process of variety and selection where many individual entrepreneurs pursue an observed market opportunity and try to economically exploit a new idea. However, due to an increased uncertainty in the global knowledge economy, it is not clear a priori which of these different new ideas are economically viable (Audretsch & Thurik, 2000). Only after setting up a new business, entrepreneurs find out what consumers prefer and hence, whether their new ideas are economically viable. Most of these new ideas will not be economically viable but some of them will be. The successful ideas often turn into innovations. When there are more entrepreneurs pursuing new ideas, the level of competition is higher and the process of variety (i.e. a large number of different new ideas being pursued) and selection will be more intense. From an economy-wide point of view this higher intensity increases the probability of actual innovations taking place (i.e. of economically viable ideas being 'selected' through the market). Thus, entrepreneurs are important for introducing or generating innovations (Autio, 1994; Acs & Audretsch, 2003). Several empirical studies confirm a positive relationship between entrepreneurship in terms of new venture creation and national economic growth for developed countries (see e.g. van Stel, 2006). We expect that in investigating the relationship between new venture creation and economic growth it is relevant to distinguish between export-oriented new ventures and domestic new ventures. In particular the present paper builds on the assumption that exporting entrepreneurs develop specific skills (including human capital and innovative skills) through their export activity and, consequently, a high number of exporting entrepreneurs may be even more conducive to the process of variety and selection described above, compared to high numbers of domestically operating entrepreneurs. In other words, high numbers of exporting new

ventures may be of specific importance for generating knowledge spillovers and may have a particularly strong impact on competition and innovation and, subsequently, on economic growth.

Third, we aim to extend the literature on new venture internationalization and growth by focusing on the country-level. Within the field of entrepreneurship there is increased attention for international new ventures, including export-oriented new ventures (Knight and Cavusgil, 1996; Oviatt & McDougall, 1994; McDougall, 1989). Research on international new ventures was spurred by the finding that international new ventures differ significantly from domestic new ventures in terms of their strategy profile and industry structure (McDougall, 1989). Furthermore, interest in international new ventures has also increased because it has been observed that the number of international new ventures is increasing in many different countries around the world (Rennie, 1993; Oviatt & McDougall, 1994; Moen & Servais, 2002) and such ventures are thought to be of importance in terms of innovation and employment (Moen, 2002). However, only a few empirical studies have investigated the effect of exports on new ventures' business performance (Bloodgood et al., 1996; McDougall & Oviatt, 1996; Zahra et al. 2000), and those that did investigated the link at the micro level. Whereas it is widely believed that internationally oriented new ventures are important in terms of national economic growth (Moen, 2002), to our knowledge, this link has not been investigated empirically. In this paper we examine the link between new venture internationalization and growth at the country-level. The advantage of using the country- or macro-level is that it is possible to capture indirect effects of export-oriented new ventures that reach further than the firms' own performance (such as spillover effects and effects from higher levels of competition and increased diversity). Furthermore, based on previous research (Moen, 2002) we distinguish between new ventures with a moderate export orientation and new ventures with a high export orientation.

Our empirical analysis uses data for 36 countries that have participated in the Global Entrepreneurship Monitor in 2002. We make a distinction between three groups of countries: higher-income countries, lower-income countries and transition economies.

The paper is structured as follows. A review of the literature and the development of our hypotheses are presented in Section 2. Next, in Section 3, we will describe the data and the research method used for the empirical analysis. In Section 4 we present the results of our empirical analysis of the association of the presence of new ventures (domestic new ventures and export-oriented new ventures) and national economic growth. Finally, in Section 5 we discuss the outcomes and draw some conclusions.

2. Theory and hypotheses

2.1. Exports and new venture internationalization

Exports are crucial for the economic development of nations (Lages & Montgomery, 2004; Girma et al., 2004; Almeida Couto et al., 2006). Exports have a positive impact on the national amount of foreign exchange reserves and on national prosperity, and contribute to the development of national industries, to improved productivity and to the creation of employment. Previous research regarding the importance of export for national economies has strongly focused on established corporations and large multinational enterprises and less attention has been paid to the role of newly established firms (Audretsch & Thurik, 2000). Recently however there has been an increased focus on international operations of new ventures (Oviatt & McDougall, 1994). Such ventures are commonly labelled as born globals (Rennie, 1993; Knight & Cavusgil, 1996) or international new ventures (Oviatt & McDougall, 1994). Whereas it is generally acknowledged that international operations of new ventures are important in terms of macro-economic growth (Moen, 2002), to our knowledge, this link has not been investigated empirically. This may partly

be due to the lack of data (in particular international comparative statistics) concerning export activity of new firms at the country level. In order to contribute to this gap in research, the focus in this study will be on investigating the link between a country's prevalence of new ventures that are oriented toward exports and its rate of economic growth. We use a unique data set from the Global Entrepreneurship Monitor project. This data set provides a first attempt to collect international comparative data on the export orientation of a country's early-stage ventures.

Literature on international new ventures describes the internationalization of firms as "a rapid process of international expansion from inception, using a range of market entry modes in multiple markets" (Jones & Coviello, 2005). However, export activity is considered to be the first and most common step in a firm's international expansion (Young et al., 1988; Young, 1987) and export activity is the most common mode of foreign operation for new ventures (Zahra et al., 1997). Therefore, the focus in this study is on new ventures' export orientation and not on other modes of internationalization. One reason why exporting is an important means for international expansion among newly established firms is that export does not require major capital investments (Erramilli & D'Souza, 1993; Root, 1994) and has lower commercial and financial risk as compared to for example foreign direct investment (Jaffe & Pasternak, 1994).

2.2. New venture internationalization, firm performance and learning

The financial merits of export at the firm level are well reported in literature. For example, it is widely acknowledged in literature that exports are important for expanding sales, achieving business growth and for improving financial performance (Edmunds & Khoury, 1986; Daniels & Bracker, 1989; Zahra et al., 1997). It is believed that new ventures may benefit from exporting in terms of improving a new venture's competitive performance, financial performance and growth (Zahra et al., 1997; Oviatt & McDougall, 1997). The new venture internationalization model suggests that internationalization is necessary for ensuring opportunities for firm growth (Oviatt & McDougall, 1994). However, empirical research on international activities of new ventures has focused mainly on antecedents of early-stage international activity in trying to explain the emergence of these internationally oriented new firms or the early internationalization of firms/explaining the decision to internationalize early (Zahra, 2005). Only a few empirical studies have focused on identifying economic contributions of early-stage firms in terms of growth and profitability (Bloodgood et al., 1996; McDougall & Oviatt, 1996; Zahra et al. 2000). These studies find only weak evidence of a positive link between internationalization and performance. For example Bloodgood et al. (1996) that focus on 61 high-potential new ventures in the U.S., found that internationalization was significantly, but only marginally, related to earnings after two years, and was not related to sales growth. McDougall & Oviatt (1996) found, for their sample of 62 U.S. new venture manufacturers in the computer and communications equipment industries, that higher levels of export sales were related to higher relative market share two years later, but they did not find evidence of a direct significant relation between percentage of foreign sales and subsequent return on investment. Because of this weak empirical foundation more research is needed on the direct as well as indirect effects of new ventures' international operations on economic performance (Zahra et al., 2000).

Export activity may not only generate financial benefits for the firm, but can also be viewed as a process of learning and of accumulation of knowledge (Yeoh, 2004). The economics literature suggests a "learning-by-exporting" effect (Branstetter, 2006) and Oviatt & McDougall (1994) argue that international new ventures are also likely to enjoy advantages of knowledge generation through internationalization. In particular, it is suggested that international new ventures differ fundamentally from domestic new ventures, because internationalization is a source of competitive advantage through which new ventures are able to access resources and thus to expand their resource base (Oviatt & McDougall, 1994; Kuemmerle, 1999; 2002; Autio, 2005). Case study evidence suggests that for ventures that internationalize in early-stages cross-

border activities that augment the venture's knowledge base are even more prevalent than cross-border activities that exploit the venture's knowledge base (Kuemmerle, 2002). The augmentation of knowledge may relate to different kinds of knowledge.

For example, through exporting firms learn to improve or upgrade their products or their production processes or get access to new technological knowledge through contacts with advanced competitors in their export markets (Branstetter, 2006). Thus, exports are likely to contribute to a firm's innovativeness and technological learning (Zahra et al., 2000; Hessels, 2007). Yli-Renko et al. (2001) find for a sample of young (1-10 years old) technology-based ventures that the acquisition of knowledge through exports relates positively to the development of new products, the development of technological distinctiveness and the realization of overall lower sales costs.

Also, exports are likely to result in increased knowledge and higher human capital levels, also for small and new firms (Lu & Beamish, 2001). For example, exports result in the accumulation of knowledge of foreign markets and in the development of new organizational capabilities through the accumulation of experience abroad (Johanson & Vahlne, 1977; Zahra et al., 2000). Gaining new knowledge about foreign markets, including knowledge about foreign customers and competitors, also helps firms to differentiate themselves from others on e.g. product features such as quality or customer service (Yeoh, 2004). Also, the experience that firms gain from export activity may lead them to explore new foreign markets and get involved in other forms of internationalization, such as licensing, joint ventures or direct investment abroad (Lages & Montgomery, 2004). Exports may also contribute to enhancement of managerial skills. Other potential merits of exporting include the extension of the life cycles of products and absorbing excess capacity (Daniels & Bracker, 1989; Katsikeas et al., 2000; Lages & Montgomery, 2004). Furthermore, through market diversification, exporting provides an opportunity for firms to become less dependent on the domestic market.

The view that exporting provides a basis for organizational learning is also in line with organizational learning theory (Cohen & Levinthal, 1990). In particular, this theory stresses that learning, in the sense of the acquisition, assimilation and exploitation of new knowledge, provides a base upon which further knowledge and innovations can be developed. The resource-based view (Wernerfelt, 1984; Barney, 1991), which argues that internal firm resources are key to the firm's acquisition and maintenance of sustainable competitive advantage, also recognizes that internationalization may provide a means for firms to accumulate internal resources.

Regarding learning through internationalization recent literature suggests a learning advantage of newness for new ventures (Autio et al., 2000; Knight & Cavusgil, 2004; Yeoh, 2004; Sapienza et al., 2006). Autio et al. (2000) find that internationalization at an early age is positively related to a firm's subsequent international growth. The idea is that internationalization results in innovativeness, knowledge and capabilities that increases their probability for growth and for success in foreign markets (Autio, 2000; Knight & Cavusgil, 2004). Yeoh (2004) also suggests that an exposure to foreign markets early in a firm's age fosters different kinds of learning such as technological learning and foreign market learning. Sapienza et al. (2006) argue that new ventures have a high ability to learn through internationalization because they are less likely to suffer from structural inertia and rigidities (resulting from e.g. existing routines or resource configurations) than more established organizations. In addition, Lu & Beamish (2001) argue that, since internationalization is in particular risky and uncertain for new ventures, this may stimulate processes of learning and adaptation through foreign market entries.

2.3. Export-driven new venture creation and economic growth

Entrepreneurship involves the creation or startup of new ventures (Gartner, 1985; Audretsch & Keilbach, 2004). Entrepreneurship researchers have suggested that entrepreneurship

or the propensity to start new firms should be added to models explaining economic growth (Acs et al., 2005). Audretsch & Keilbach (2004) argue, based on previous empirical studies as well as theoretical arguments, that there are three means through which entrepreneurship contributes to economic growth. The first is through knowledge spillovers; the second is through increased competition by the increased number of enterprises and the third is through increased diversity since entrepreneurship increases the variety of enterprises. There is indeed empirical evidence that the creation of new ventures exerts a positive influence on economic growth in developed countries (van Stel, 2006).

Studies on the link between new venture creation and economic growth generally make no distinction between different types of new ventures. Following the increasing number of new ventures that internationalize early in their life cycles (Oviatt & McDougall, 1994; Zahra et al., 2000) international activities are of increasing interest to researchers in entrepreneurship (McDougall & Oviatt, 2004). We expect that in studying the relationship between new venture creation and economic growth it is relevant to distinguish between new ventures focusing on exports and new ventures focusing on generating domestic sales only. We argue that in particular export-driven new ventures may contribute to the generation of positive knowledge spillovers, to increased competition and to increased diversity in the economy and, consequently, to economic growth. In the economics literature it is considered a stylized fact that exporting firms on average perform better than non-exporting firms, in particular they tend to be more productive, more capital intensive and more innovative (Girma et al., 2004; Kneller & Pisu, 2007). There are two explanations. First, in order to be able to export, firms need some kind of competitive advantage such as unique resources or innovative abilities, because they have to adapt their products or services to foreign markets. Exporting entrepreneurs either already possess these resources and capabilities before entering a foreign market or they have to develop them since the knowledge and capabilities that the firm has developed for the local or national market are often not suitable to operations abroad (Lu & Beamish, 2001). Second, export activity has many potential benefits for new ventures, not only in terms of financial gains, but export may also contribute to learning or competence development. By doing business abroad firms are exposed to new processes and technologies which may further contribute to increased productivity and innovativeness. In sum, exporting facilitates both the exploitation of existing knowledge and the acquisition of new knowledge (e.g. market knowledge and technological knowledge).

We expect that these positive effects of export activity equally apply to new ventures and we find support for this in the literature. For example, the literature on international new ventures suggests that new ventures that are able to export from the start tend to be innovative or possess unique resources, in particular intangible knowledge-based resources (e.g. management experience in global markets or technological capabilities) (Oviatt & McDougall, 1994; Bloodgood et al., 1996). International new ventures also tend to have high initial levels of human resources (Yeoh, 2004). In the previous section we already discussed the learning benefits from exporting for new ventures.

2.4. Developing the hypotheses

The concepts developed so far lead us to argue that (early) export may have positive effects on a firm's performance and learning as well as on a country's economy as a whole. First, when many new ventures are oriented toward export, the chance that the knowledge gained through this activity spills over to other firms may be considered high. The reason for this is that small and new firms have a lot of business contacts with other firms (for instance through cooperation or through buyer-supplier relations) which may lead to exchange of knowledge. Via these so-called spillovers knowledge may accumulate not only at the firm level (i.e. the exporting firm) but also at the aggregate level (i.e. the firm population in general). Second, since international new ventures both build on their unique knowledge or resources and also accumulate new knowledge

and resources through their export activity, they are likely to increase competition in the national market. Third, a higher incidence of exporting new ventures may in particular contribute to more diversity in the economy, since export-oriented new ventures tend to be innovative and they may further increase their innovativeness through foreign market exposure.

We further argue that in examining the relationship between new venture creation and economic growth, next to distinguishing between domestic new ventures and export-oriented new ventures, it is relevant to distinguish between new ventures with a moderate focus on exports and new ventures with a substantial or high focus on exports (Moen, 2002). New ventures with a high focus on exports are likely to have a greater knowledge base or to have a higher level of firm-specific advantages (enabling them to have a high focus on exports) than more moderate exporters. Furthermore, the efficiency by which new knowledge is learned and accumulated through internationalization may be higher in ventures with a substantial focus on exports, for example because such ventures are likely to have a greater exposure to various kinds of knowledge (Yeoh, 2004).

Furthermore, we expect that the relationship between export orientation among new ventures and economic growth may differ for different groups of countries along their level of economic development. First, it is relevant to distinguish between higher-income countries and lower-income countries. Higher-income countries are better integrated into the world economy than lower-income countries (UNCTAD, 2006). In higher-income countries entrepreneurs tend to have higher human capital levels and consequently they are more likely to have greater absorptive capacity and thus to learn through exporting. In lower-income countries, the rate of necessity entrepreneurship is comparatively high and opportunities to export are more limited for new ventures, since entrepreneurs tend to have lower human capital levels and to be active in low value-added activities. Consequently, export-oriented new ventures in lower-income economies are less likely to increase diversity, to stimulate competition and to generate positive externalities to other economic actors than export-oriented new ventures in higher-income countries..

A group of countries that deserve specific attention are transition economies. These countries used to be closed economies and have only fairly recently opened their markets to the world economy, meaning that there are many potential export opportunities for firms from these countries that have not yet been exploited. There is a lot of internal turbulence resulting from processes of restructuring and privatization, which has resulted in higher levels of entrepreneurial activity in these countries. Transition economies are also characterized by relatively low levels of GDP per capita, meaning that entrepreneurs from these countries have limited opportunities for growth in the domestic market, which may stimulate firms to expand to foreign markets. Also, these countries are characterized by highly dynamic environments. Foreign firms are now increasingly operating within their markets, which also contributes to these economies being highly turbulent. Furthermore, the population in transition economies is rather highly educated and there are possibilities for cheap high value added production. Overall, this leads us to suspect that export-driven new ventures are more likely to contribute to economic growth in higher-income and transition economies as compared to lower-income countries.

In our analysis we focus on the macro- or national level, since a macro-analysis provides the possibility to both capture the direct effects of exporting on new venture performance and the indirect effects of exporting new ventures that reach further than their own performance. For instance, an increase in the number of exporting new ventures may stimulate incumbent firms to improve their performance as otherwise the incumbents may no longer be able to compete in the market they operate on (van Stel, 2006). Thus, by using a macro-level analysis it is possible to incorporate economy-wide effects in terms of knowledge spillovers, increased competition and increased diversity. To our knowledge, no attempt has been made thus far to link the prevalence of export-oriented new ventures to macro-economic outcomes.

Based on the arguments developed above we formulate the following four hypotheses:

H1: There is a positive relationship between a country's prevalence of new ventures and its rate of economic growth

H2: The positive relationship between a country's prevalence of new ventures and its rate of economic growth is more pronounced for export-driven new ventures versus domestic new ventures.

H3: The positive relationship between a country's prevalence of export-driven new ventures and its rate of economic growth is more pronounced for new ventures with a high orientation on exports versus new ventures with a moderate orientation on exports.

H4: The positive relationship between a country's prevalence of export-driven new ventures and its rate of economic growth is more pronounced in higher-income and transition countries versus lower-income countries.

3. Methodology

3.1. Data and sample

Data on entrepreneurial activity and export-oriented entrepreneurship are taken from the Global Entrepreneurship Monitor (GEM). We use a sample of 36 countries participating in GEM in 2002. The GEM is a world-wide research project aimed at describing and analyzing entrepreneurial activity and the institutional conditions to which this is subjected in a large number of countries. Data is collected through adult population surveys that are conducted in participating countries. In all participating countries representative samples of randomly selected adults (at least 2,000 per country) are surveyed each year. The GEM project offers comparable data across countries, since entrepreneurial activity is consistently measured in a harmonized way across a large number of countries (Reynolds et al., 2005).

Within the framework of GEM a TEA (Total early-stage Entrepreneurial Activity) index has been developed in order to measure early-stage entrepreneurial activity. The TEA is a combination of nascent entrepreneurs (those currently involved in concrete activities to start up a new business) and owners of young businesses (those currently owning a business that is less than 42 months old).

Whereas a large number of organizations publish international comparative export data such as the WTO, OECD, UN (Commodity Trade Statistics Database-COMTRADE) and Eurostat, there are no official international comparative export statistics relating to exports by small and new firms. In this respect the Global Entrepreneurship Monitor initiative fills an important gap by providing a harmonized measure for export orientation of entrepreneurs across countries.

Our empirical analysis builds on a previous article by van Stel et al. (2005) in which it is investigated whether Total early-stage Entrepreneurial Activity (TEA) -as defined below- is related to GDP growth for a sample of 36 countries. The authors find that the TEA indeed

positively relates to economic growth but that the influence depends on the level of economic development. In particular the contribution to economic growth is found to be stronger for more highly developed countries, as compared to developing countries. The authors argue that this may be related to higher human capital levels of entrepreneurs in higher developed countries.

In the current paper we will perform a similar regression analysis but next to the general TEA, we will also use the TEA domestic activity, the TEA export rate, the TEA medium export rate and the TEA high export rate as independent variables. Recent insights not only indicate that new venture internationalization is an important phenomenon to study but also that the age at which new ventures internationalize is important. For example, it has been argued that the earlier a firm internationalizes the more likely the firm will develop capabilities for adaptation to uncertain environments (Sapienza et al., 2006). Research has also found that an early initiation of internationalization is related with faster international growth (Autio, et al., 2000). Based on these insights we want to include new ventures that focus on exports in their earliest stages and therefore we use the TEA index including both those actively involved in starting a new venture and entrepreneurs of young businesses. Such a definition corresponds with the view that it is essential for international new ventures to view the domain in which they operate “as international from the initial stages of the firm’s operation.” (McDougall, 1989).

Next to data on early-stage entrepreneurial activity (TEA), early-stage domestic activity (TEA domestic activity) and early-stage export activity (TEA export) from the GEM we also use data from secondary sources on GDP growth, per capita income, and the growth competitiveness index (GCI). The sources and definitions of all variables we use are described below.

3.2. Measures

Total early-stage Entrepreneurial Activity (TEA)

TEA is defined as the percentage of adult population that is either actively involved in starting a new venture or is the owner/manager of a business that is less than 42 months old. Data on total early-stage entrepreneurial activity are taken from the GEM Adult Population Survey for 2002.

Total early-stage Domestic Activity (TEA Domestic)

The TEA domestic rate is defined as the percentage of adult population that is either actively involved in starting a new venture or is the owner/manager of a business that is less than 42 months old, and has no customers abroad. This data is also derived from the GEM 2002 Adult Population Survey. We define this group as domestic new ventures.

Total early-stage Export Activity (TEA Export)

The TEA export rate is defined as the percentage of adult population that is either actively involved in starting a new venture or is the owner/manager of a business that is less than 42 months old, and has customers abroad. Data on early-stage export activity is also taken from the GEM Adult Population Survey 2002.

It is our view that research has not sufficiently distinguished between new ventures with a high focus on exports and those with a low or moderate export orientation. In our analysis we distinguish between new ventures with a moderate export orientation, which we label “TEA medium export rate” (1-25% of customers live abroad) and new ventures with a high export orientation: “TEA high export rate” (26-100% of customers live abroad). Having a larger share of customers abroad increases the amount/diversity of knowledge that young firms acquire through internationalization.

Growth of GDP (Δ GDP)

Real GDP growth rates are taken from the IMF World Economic Outlook database of the International Monetary Fund, version September 2005.

Per capita income (GNIC)

Gross national income per capita 2001 is expressed in (thousands of) purchasing power parities per US\$, and these data are taken from the 2002 World Development Indicators database of the World Bank.

Growth Competitiveness Index (GCI)

Data on the GCI 2001 are taken from page 32 of The Global Competitiveness Report 2001–2002. The GCI is constituted of the following three main factors assessing a country's potential for economic growth: the quality of the macro-economic environment, the state of the public institutions and the level of technology. For further details about this index we refer to McArthur and Sachs (2002).

3.3. Analysis

We investigate whether a country's level of entrepreneurship (in terms of the prevalence of new ventures) may be considered a determinant of economic growth, next to technology, public institutions and the macroeconomic environment (which are captured in a combined way by the GCI). As both entrepreneurship and the factors underlying the GCI are assumed to be structural characteristics of an economy, we do not want to explain short term economic growth but rather growth in the medium term. Therefore we choose average annual real GDP growth over a period of four years (2002–2005) as the dependent variable in this study. Following van Stel et al. (2005) we use (the log of) initial income level of countries, to correct for catch-up effects, and lagged growth of GDP, to correct for reversed causality effects, as additional control variables.

Following van Stel et al. (2005), we allow for the possibility of different effects of highly developed and developing countries. In addition we also test whether the effect of TEA is different for transition countries.¹ TEA rates may reflect different types of new ventures in countries with different development levels. In particular human capital levels may differ between higher and lower developed countries, implying different impacts on economic growth. This is tested by defining separate TEA variables for different groups of countries (rich versus poor; highly developed versus transition versus developing). Our model is represented by Equations (1), (2) and (3). These equations are estimated separately by OLS. Hypothesis 1 corresponds to parameters b_1 and c_1 being greater than zero. The hypothesis that the positive relationship between a country's prevalence of new ventures and its rate of economic growth is more pronounced for export-oriented new ventures as compared to domestic new ventures (H2) corresponds to b_3 (c_3) being larger than b_2 (c_2). Hypothesis 3 implies that coefficients b_3 and c_3 are increasing in the extent of export orientation of the entrepreneurs included in the TEA measure. Finally, the hypothesis of a stronger relationship between a country's prevalence of export-driven new ventures and economic growth for rich countries compared to poor countries (H4) corresponds to coefficient b_3 being larger than coefficient c_3 .

¹ The 36 countries in our sample are: Argentina^D, Australia, Belgium, Brazil^D, Canada, Chile^D, China^T, Taiwan, Denmark, Finland, France, Germany, Hong Kong, Hungary^T, Iceland, India^D, Ireland, Israel, Italy, Japan, Korea, Mexico^D, Netherlands, New Zealand, Norway, Poland^T, Russia^T, Singapore, Slovenia^T, South Africa^D, Spain, Sweden, Switzerland, Thailand^D, United Kingdom and United States. Mark ^D indicates developing country while mark ^T indicates a transition country. In the categorisation rich versus poor, eleven of the twelve countries marked as ^D or ^T are classified as (relatively) poor, the exception being Slovenia.

$$\Delta GDP_{it} = a + b_1 TEA_{i,t-1}^{rich} + c_1 TEA_{i,t-1}^{poor} + d \log(GNIC_{i,t-1}) + e GCI_{i,t-1} + f \Delta GDP_{i,t-1} + \varepsilon_{it} \quad (1)$$

$$\Delta GDP_{it} = a + b_2 TEA_{domestic\ i,t-1}^{rich} + c_2 TEA_{domestic\ i,t-1}^{poor} + d \log(GNIC_{i,t-1}) + e GCI_{i,t-1} + f \Delta GDP_{i,t-1} + \varepsilon_{it} \quad (2)$$

$$\Delta GDP_{it} = a + b_3 TEA_{export\ i,t-1}^{rich} + c_3 TEA_{export\ i,t-1}^{poor} + d \log(GNIC_{i,t-1}) + e GCI_{i,t-1} + f \Delta GDP_{i,t-1} + \varepsilon_{it} \quad (3)$$

To illustrate the data at hand, Table 1 provides the TEA rates and the TEA medium export and high export rates in 2002 as well as the average annual growth rates of GDP over the period 2002-2005.

Table 1 Entrepreneurial activity rates (2002) and GDP growth rates for 36 countries

	TEA rate	TEA medium export rate (1-25% foreign customers)	TEA high export rate (>25% foreign customers)	Average GDP growth rate 2002-2005 (%)
Argentina	14.15	0.00	1.82	3.60
Australia	8.68	3.29	0.76	3.18
Belgium	2.99	1.33	0.88	1.53
Brazil	13.53	0.50	0.28	2.65
Canada	8.82	4.23	1.86	2.73
Chile	15.68	4.95	2.86	4.48
China	12.34	3.37	0.92	9.08
Denmark	6.53	1.82	1.12	1.45
Finland	4.56	2.19	1.33	2.50
France	3.20	1.64	0.71	1.43
Germany	5.16	3.62	0.95	0.58
Hong Kong	3.44	1.17	1.17	4.88
Hungary	6.64	1.25	0.51	3.50
Iceland	11.32	5.54	1.81	3.28
India	17.88	0.08	0.17	6.63
Ireland	9.14	4.57	2.00	5.00
Israel	7.06	2.03	1.04	2.28
Italy	5.90	1.36	0.81	0.48
Japan	1.81	0.31	0.05	1.45
Korea	14.52	5.21	2.01	4.63
Mexico	12.40	1.59	1.91	2.40
Netherlands	4.62	1.46	0.78	0.60
New Zealand	14.01	5.84	3.08	3.85
Norway	8.69	3.16	1.71	1.88
Poland	4.44	0.99	0.21	3.40
Russia	2.52	0.11	0.34	6.18
Singapore	5.91	2.08	1.49	4.23
Slovenia	4.63	1.78	1.13	3.58
South Africa	6.54	0.97	1.01	3.60
Spain	4.59	1.66	0.64	2.98
Sweden	4.00	0.99	0.75	2.43
Switzerland	7.13	2.83	2.12	0.60
Taiwan	4.27	0.90	0.70	4.08
Thailand	18.90	4.57	1.52	5.45
United Kingdom	5.37	1.67	0.83	2.40
United States	10.51	1.65	0.50	3.00
<i>Mean</i>	<i>8.11</i>	<i>2.24</i>	<i>1.16</i>	<i>3.22</i>
<i>Standard deviation</i>	<i>4.59</i>	<i>1.64</i>	<i>0.73</i>	<i>1.84</i>

Sources: GEM and IMF.

4. Results

The results of our empirical exercises are in Tables 2-6. In Table 2 the regression results of the impact of the general TEA index are presented (see Equation 1), while Tables 3, 4, 5 and 6 show the results using TEA domestic (see Equation 2), TEA export, TEA medium export and TEA high export as main independent variables (see Equation 3).

Table 2 Explaining economic growth from TEA rate; N=36.

TEA	Model 1	Model 2	Model 3
Constant	19.6 ** (4.2)	26.1 ** (3.0)	22.2 ** (2.5)
TEA	.047 (0.8)		
TEA rich		.087 * (1.8)	
TEA poor		-.005 (0.1)	
TEA highly developed			.11 ** (2.2)
TEA transition			.19 (1.4)
TEA developing			.023 (0.2)
log (GNIC)	-2.2 ** (2.8)	-2.8 ** (2.7)	-2.4 ** (2.6)
GCI	.62 (0.7)	.64 (0.8)	.63 (0.7)
lagged gdp growth	.37 ** (2.9)	.30 ** (2.1)	.22 (1.2)
R ²	0.626	0.636	0.662
adjusted R ²	0.577	0.576	0.592

Absolute heteroskedasticity-consistent *t*-values are between brackets. Dependent variable is average annual growth of GDP over the period 2002-2005. TEA is Total Entrepreneurial Activity rate (*Global Entrepreneurship Monitor*); GCI is growth competitiveness index 2001 (*Growth Competitiveness Report*); GNIC is per capita income of 2001; Lagged GDP growth is average annual growth of GDP over the period 1998-2001.

* Significant at a 0.10 level.

** Significant at a 0.05 level

Table 3 Explaining economic growth from TEA domestic rate (no customers abroad); N=36.

TEA no export	Model 1	Model 2	Model 3
Constant	22.0 ** (3.7)	30.3 ** (2.9)	22.2 ** (2.5)
TEA_domestic	.0084 (0.1)		
TEA_domestic <i>rich</i>		.14 (1.5)	
TEA_domestic <i>poor</i>		-.076 (0.5)	
TEA_domestic <i>highly developed</i>			.15 (1.6)
TEA_domestic <i>transition</i>			.15 (0.6)
TEA_domestic <i>developing</i>			-.031 (0.2)
log (GNIC)	-2.5 ** (2.9)	-3.3 ** (2.6)	-2.8 ** (2.3)
GCI	.80 (0.9)	.74 (0.9)	.74 (0.8)
lagged gdp growth	.35** (2.6)	.28 ** (1.6)	.24 (1.2)
R ²	0.617	0.641	0.652
adjusted R ²	0.568	0.581	0.580

Absolute heteroskedasticity-consistent *t*-values are between brackets. Dependent variable is average annual growth of GDP over the period 2002-2005. TEA is Total Entrepreneurial Activity rate (*Global Entrepreneurship Monitor*); GCI is growth competitiveness index 2001 (*Growth Competitiveness Report*); GNIC is per capita income of 2001; Lagged GDP growth is average annual growth of GDP over the period 1998-2001.

* Significant at a 0.10 level.

** Significant at a 0.05 level

Table 4 Explaining economic growth from TEA export rate (1-100% of customers from abroad); N=36

TEA export	Model 1	Model 2	Model 3
Constant	22.3 ** (6.2)	22.1 ** (4.4)	22.3 ** (6.0)
TEA_export	.13 * (1.8)		
TEA_export <i>rich</i>		.13 (1.6)	
TEA_export <i>poor</i>		.14 (1.0)	
TEA_export <i>highly developed</i>			.16 * (1.9)
TEA_export <i>transition</i>			.47 ** (2.1)
TEA_export <i>developing</i>			.10 (0.9)
log (GNIC)	-2.4 ** (3.5)	-2.4 ** (3.0)	-2.4 ** (3.6)
GCI	.54 (0.6)	.54 (0.6)	.66 (0.7)
lagged gdp growth	.33 ** (2.6)	.33 ** (2.4)	.24 (1.3)
R ²	0.639	0.639	0.658
adjusted R ²	0.592	0.578	0.587

Absolute heteroskedasticity-consistent *t*-values are between brackets. Dependent variable is average annual growth of GDP over the period 2002-2005. TEA is Total Entrepreneurial Activity rate (*Global Entrepreneurship Monitor*); GCI is growth competitiveness index 2001 (*Growth Competitiveness Report*); GNIC is per capita income of 2001; Lagged GDP growth is average annual growth of GDP over the period 1998-2001.

* Significant at a 0.10 level.

** Significant at a 0.05 level

Table 5 Explaining economic growth from TEA medium export rate (1-25% of customers from abroad); N=36

TEA medium export	Model 1	Model 2	Model 3
Constant	22.3 ** (6.3)	21.8 ** (4.3)	21.9 ** (5.5)
TEA_medium export	.17 * (1.7)		
TEA_medium export <i>rich</i>		.16 (1.3)	
TEA_medium export <i>poor</i>		.20 (1.1)	
TEA_medium export <i>highly developed</i>			.19 (1.5)
TEA_medium export <i>transition</i>			.56 * (1.7)
TEA_medium export <i>developing</i>			.14 (0.8)
log (GNIC)	-2.4 ** (3.5)	-2.3 ** (3.0)	-2.4 ** (3.4)
GCI	.53 (0.6)	.51 (0.6)	.61 (0.7)
lagged gdp growth	.32 ** (2.5)	.33 ** (2.3)	.25 (1.3)
R ²	0.636	0.637	0.650
adjusted R ²	0.589	0.576	0.578

Absolute heteroskedasticity-consistent *t*-values are between brackets. Dependent variable is average annual growth of GDP over the period 2002-2005. TEA is Total Entrepreneurial Activity rate (*Global Entrepreneurship Monitor*); GCI is growth competitiveness index 2001 (*Growth Competitiveness Report*); GNIC is per capita income of 2001; Lagged GDP growth is average annual growth of GDP over the period 1998-2001.

* Significant at a 0.10 level.

** Significant at a 0.05 level

Table 6 Explaining economic growth from TEA high export rate (26-100% of customers from abroad); N=36

TEA high export	Model 1	Model 2	Model 3
Constant	22.2 ** (5.7)	23.0 ** (4.3)	23.4 ** (5.6)
TEA_high export	.36 (1.4)		
TEA_high export <i>rich</i>		.42 * (1.7)	
TEA_high export <i>poor</i>		.30 (0.7)	
TEA_high export <i>highly developed</i>			.53 * (1.8)
TEA_high export <i>transition</i>			1.80 ** (2.0)
TEA_high export <i>developing</i>			.26 (0.7)
log (GNIC)	-2.5 ** (3.4)	-2.5 ** (3.1)	-2.7 ** (3.7)
GCI	.65 (0.8)	.64 (0.7)	.88 (1.0)
lagged gdp growth	.36 ** (2.9)	.35 ** (2.5)	.24 (1.4)
R ²	0.637	0.637	0.666
adjusted R ²	0.590	0.577	0.597

Absolute heteroskedasticity-consistent *t*-values are between brackets. Dependent variable is average annual growth of GDP over the period 2002-2005. TEA is Total Entrepreneurial Activity rate (*Global Entrepreneurship Monitor*); GCI is growth competitiveness index 2001 (*Growth Competitiveness Report*); GNIC is per capita income of 2001; Lagged GDP growth is average annual growth of GDP over the period 1998-2001.

* Significant at a 0.10 level.

** Significant at a 0.05 level

From Table 2 we see that the general TEA index has a significantly positive impact on national economic growth for highly developed countries but no impact for transition and developing countries, providing partial support for hypothesis 1.

Tables 3-6 reveal that a country's prevalence of export-driven new ventures is positively related to economic growth, whereas this is not the case for domestic new ventures. Comparing the coefficients of the various TEA rates across the tables, we see that in each of the three model variants for TEA export the impact of TEA export is higher compared to the impact of TEA domestic. For instance, the coefficient for the TEA domestic rate is 0.0084, while the coefficients of the TEA export rate, the TEA medium export rate and the TEA high export rate are 0.13, 0.17 and 0.36, respectively. The measures for TEA export also display higher t-values as compared to TEA domestic.² Our suspicion that it is relevant to distinguish between domestic new ventures and export-driven new ventures when investigating the relationship between new venture creation and economic growth is confirmed. These outcomes provide support for our hypothesis 2.

For highly developed countries we find a significant positive association for new ventures that have a substantial or high focus on exports with economic growth but no evidence of a significant impact for medium export involvement. It seems that only a substantial amount of export activity by new ventures contributes to macro-economic growth. This could mean that exporting new ventures have to pass a threshold level of export activity in order to actually increase their human capital levels (e.g. by learning from the experience gained abroad) so that they contribute to growth. A similar pattern is found for transition countries, in accordance with hypothesis 3.

As indicated before, an important element in our analysis is to distinguish between different groups of countries, in terms of development levels. Table 3 shows that the presence of domestic new ventures makes no significant contribution to economic growth in the various groups of countries that we distinguish. Looking at Tables 4-6 we see that having more export-oriented new ventures seems to be important in highly developed as well as in transition countries. The magnitude and the statistical significance of the estimated coefficient indicate a stronger impact for transition economies though. Finally, as regards developing countries, van Stel et al. (2005) find no impact of entrepreneurship in general, in terms of new venture creation, on economic growth (see also Table 2).³ For these economies we also find no evidence that export-oriented new ventures contribute to economic growth. It may be that human capital levels of entrepreneurs in these countries are too low. Overall, our results provide support for Hypothesis 4.

5. Discussion and Conclusion

This paper investigates the relationship between new venture creation and economic growth. We make a distinction between domestic new ventures and export-driven new ventures. Previous research has suggested that it is relevant to distinguish between these two types of new ventures since the two groups have been found to differ significantly from one another, e.g. in terms of strategy profile and industry structure (McDougall, 1989). Our results indicate that

² Please note that ideally - in order to test whether export-oriented entrepreneurship makes a more important contribution to economic growth than entrepreneurship in general - we would like to include the TEA and the TEA_export variables in one and the same model. Indeed we did perform exercises including TEA and TEA_export in a single model. The results of these analyses revealed that the magnitude of the regression coefficients is similar to the coefficients reported in Tables 2-5 for the separate models. However, because of multicollinearity t-values are lower in these single models. In fact, the correlation coefficients between TEA on the one hand and the various TEA_export variables on the other hand are above 0.6. Because of these multicollinearity problems, we have used separate models in our analysis. Nevertheless, since the magnitude of the regression coefficients when using a single model is comparable to using separate models, we feel that the results reported in Tables 2-5 are quite robust.

³ These authors refer to a possible lack of larger companies in these poorer countries as a possible explanation for the zero effect of entrepreneurial activity.

export-driven new ventures make a significant contribution to economic growth whereas domestic new ventures do not. This suggests that in particular export-driven new ventures will contribute to the generation of knowledge spillovers, increased competition and increased diversity, ultimately resulting in higher economic growth rates. These findings further underline the relevance of making a distinction between export-oriented and non-exporting new ventures in entrepreneurship research and provide additional support for studying cross-border behavior of new ventures (McDougall, 1989; Oviatt & McDougall, 1994; 2004; McDougall & Oviatt, 2000; Wright & Ricks, 2004; Oviatt & McDougall, 2005).

We also examine the role of domestic and export-driven new ventures in GDP growth for three groups of countries: highly developed economies, transition economies and developing economies. The distinction between these three groups of countries relates to the shift from the managed to the entrepreneurial economy (Audretsch & Thurik, 2001). In particular, the nature of entrepreneurship is likely to be different for higher and lower developed countries hence the impact on economic growth may also differ (van Stel et al., 2005). The findings reveal that domestic new ventures make no significant contribution to economic growth in all three groups of countries. For export-driven new ventures the picture is more diverse.

We find that in developed countries new ventures with a high orientation on exports make a significant contribution to economic growth. In developed countries, technologies are in general more widely available than in less developed countries and enterprises increasingly specialize in knowledge-based activities. Therefore, new ventures' foreign operations may be based on the presence of specific technological knowledge, skills and valuable resources that are available within the firm (Oviatt & McDougall, 1997). For these ventures international expansion is viable and sometimes even necessary for survival, and they are likely to display high international involvement. Furthermore, these ventures are likely to develop specific skills (including innovative skills) through their export activity, and may, therefore, have a particularly strong impact on economic growth. However, we find no impact on economic growth in developed economies for new ventures that have only a modest focus on exports. This may indicate that exporting entrepreneurs that start with moderate levels of exporting have to pass a threshold level of export activity, before they actually increase their human capital levels and other resources (e.g. by learning from the experience gained abroad, by getting access to knowledge and technology in foreign markets) so that they contribute to growth.

From a policy perspective our findings suggest that it may be beneficial for governments in developed economies to focus on stimulating high export ambitions among new ventures. Also, governments could introduce new ventures' export growth possibilities and ambitions as a selection criterion in export promotion programs.

In our study we find a particular strong impact of export-oriented new ventures on economic growth for transition economies. Transition economies have a highly educated labor force, a relatively low level of GDP, and a highly turbulent economy. One explanation for the relatively strong positive impact we find may be that especially the high degree of environmental dynamism in these countries positively affects the international orientation of new firms and the development of competences. Research suggests that environmental dynamism and the ensuing turbulence can stimulate or even push new ventures to internationalize their sales and to intensify their export activities (Andersson et al., 2004; McDougall et al., 1994; Oviatt & McDougall, 1994; Zahra et al., 1997). Our results suggest that in the kind of turbulent environment that is characteristic for transition economies exporting entrepreneurs may have a particularly strong impact on competition, innovation and consequently economic growth. Also, most of these economies have only recently opened up to the world economy, so there are many unexploited opportunities abroad.

The results of our study reveal that export-oriented new ventures do not seem to make a significant contribution to economic growth in developing countries. Because of the relatively high rate of necessity entrepreneurship and because of the level of economic development in these countries, new entrepreneurs – also export-oriented entrepreneurs – will tend to have low levels of human capital and will mainly be active in low-technology and low value added economic activities, such as agriculture. This may result in a low level of benefits and development of skills and competences at the firm level (Zahra et al. 2000) and may consequently explain that these firms do not so much contribute to macro-economic growth. Our results underline the suggestions made by Wennekers et al. (2005) that, because of their stage of development, low-income countries should not have a strong focus on the promotion of new business creation and that it may be more beneficial for these countries to foster the exploitation of scale economies, e.g. through foreign direct investment.

Traditional stage models propose that internationalization of firms follows a process of gradual expansion into foreign markets after firms have first established a domestic presence (Johanson & Vahne, 1977; 1990). These models predict that early internationalization may negatively affect firm survival. Conversely, researchers on new venture internationalization argue that early internationalization is viewed as necessary for ensuring opportunities for firm growth (Oviatt & McDougall, 1994; Zahra et al., 2000) and thus emphasize positive outcomes through early-stage internationalization (Sapienza et al., 2006). However, both the stage models and the model for new venture internationalization (Oviatt & McDougall, 1994) have failed to incorporate the outcomes of internationalization at the firm-level (Autio, 2005) and at the macro-level, including spillover effects. Consequently, a complete theoretical model that explicitly incorporates outcomes of internationalization is still lacking (Autio, 2005). We hope that our study will stimulate more researchers to investigate outcomes of new venture internationalization and subsequently that such studies will contribute to the development of a theoretical model of new venture internationalization that includes various outcome effects.

Limitations of this study include the small sample size and the focus on export orientation only and not on other modes of internationalization. Future research could benefit greatly from longitudinal data and from including other modes of internationalization.

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