JENA ECONOMIC RESEARCH PAPERS

2007 – 019

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www.jenecon.de

ISSN 1864-7057

The JENA ECONOMIC RESEARCH PAPERS is a joint publication of the Friedrich-Schiller-University and the Max Planck Institute of Economics, Jena, Germany. For editorial correspondence please contact m.pasche@wiwi.uni-jena.de.

Impressum:

Friedrich-Schiller-University Jena
Carl-Zeiß-Str. 3
D-07743 Jena
www.uni-jena.de

Max-Planck-Institute of Economics
Kahlaische Str. 10
D-07745 Jena
www.econ.mpg.de

Jena Economic Research Paper 2007-019

HIGH GROWTH ENTREPRENEURS, PUBLIC POLICIES AND ECONOMIC GROWTH

June 2007

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Abstract

This paper investigates whether the presence of ambitious entrepreneurs is a more important determinant of national economic growth than entrepreneurial activity in general. We use data from the Global Entrepreneurship Monitor to test the extent to which high growth ambitions of entrepreneurs affect GDP growth for a sample of 36 countries. Our results suggest that ambitious entrepreneurship contributes more strongly to macro-economic growth than entrepreneurial activity in general. We find a particularly strong effect of high-expectation entrepreneurship for transition countries. These results are interpreted in light of the ongoing debate about public policies designed to stimulate high growth start-ups.

JEL-classification: L16, L21, M13, O11, O40, O57

Keywords: entrepreneurial activity, high growth entrepreneurs, growth ambitions, high growth start-ups, public policy, economic growth

Acknowledgement: We are grateful to Friederike Welter, an anonymous reviewer and to participants at the 14th high technology small firms (HTSF) conference (Enschede, May 11-13, 2006), for providing us with helpful comments and suggestions. As usual, all errors are the responsibility of the authors.

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1. Introduction

Entrepreneurship is considered a crucial mechanism of economic development (Schumpeter 1934; Wennekers and Thurik 1999; Baumol 2002; Van Stel et al. 2005). The centrality of entrepreneurship in the current economy, or even society, is expressed as such in scientific and policy discourses as 'the entrepreneurial economy' (Audretsch and Thurik 2000) and 'the entrepreneurial society' (Ministerie van Economische Zaken 1999a; Von Bargen et al. 2003). At the macro level entrepreneurship is seen as a driver of structural change and job creation. At the micro level entrepreneurship is the engine behind the formation and subsequent growth of new firms. However, there has been mixed evidence on the effect of entrepreneurship in general on economic growth (Audretsch and Fritsch, 2002; Van Stel and Storey, 2004). It has been said that in order to promote economic development, policy makers should focus on high-growth firms instead of new – often very small – firms in general (Friar and Meyer 2003). This seems to be confirmed in empirical research: more consistent positive evidence has been made for the effect of high-potential start-ups (Wong et al. 2005) and fast-growing firms (Mason 1985; Kemp et al. 2000) on economic growth. With regard to job creation it is not new firms per se that are the key, but the relatively small number of fast-growing 'gazelles' that make up the lion's share of jobs in new firms (Birch 1979; Gallagher and Miller 1991; Kirchhoff 1994; Storey 1997; Schreyer 2000; Buss 2002). In addition, these high-growth firms are characterized by rising labour productivity at the same time as they are generating jobs (Verhoeven et al. 2002; Littunen and Tohmo 2003). Nurturing high growth firms, or "gazelles", has become a primary target and ultimate goal of entrepreneurship policy (Pages et al. 2003). As a result these high growth firms are high on the agenda of regional (Fischer and Reuber 2003), national (Smallbone et al. 2002), and supra-national policy makers (European Commission 2003b). In this paper we will investigate whether the presence of *ambitious* entrepreneurs – regarding expected firm growth – is a more important determinant of national economic growth than entrepreneurial activity in general. This is not straightforward as the ambitions of these entrepreneurs are yet to be realised at the time these ambitions are expressed.

The paper is structured as follows. We will start with a review of the literature on growth ambitions of entrepreneurs and high-growth firms. Next, we will discuss public policy aimed at high-growth firms in general (Section 3) and in the United States and the Netherlands in particular (Section 4). In the empirical part of the paper we will present the data and research method used in Section 5, while we will present our empirical analysis of

the association of the presence of ambitious entrepreneurs and national economic growth in Section 6. Section 7 discusses the outcomes and concludes.

2. Growth ambitions and high growth firms

It has been argued that entrepreneurship is not about self-employment or new firm formation per se, as most of the persons involved in this do not have an ambition to grow (Henrekson 2005). Growth motivation is a necessary factor for actual firm growth. Such growth motivation is determined by the perceived ability, need and opportunity for growth (Davidsson 1989). Although some objective factors directly affect actual growth, the entrepreneur's *perception* of the ability, need and opportunity for growth is of major importance for explaining motivation-mediated effects on growth.

There have been several studies on the determinants of growth intentions of (nascent) entrepreneurs (Davidsson 1989; Wiklund 2001; Welter 2001). These studies found that growth intentions are positively associated with gender (male), age (young), entrepreneurial experience, and experience as informal investor (Welter 2001; De Clercq et al. 2003). Perhaps more interesting for the present paper are studies on the consequences of growth intentions. In general, the growth intentions of entrepreneurs are found to be positively related to subsequent firm growth (Bellu and Sherman 1995; Kolvereid and Bullvåg 1996; Miner et al. 1994; Mok and van den Tillaart 1990; Wiklund and Shepherd 2003). However, this statistical relation between growth intentions and growth realizations tends to be rather weak. It is likely that the effect of growth intentions is moderated by the access to resources and the availability of opportunities. Wiklund and Shepherd (2003) showed that the effect of growth motivation on realized growth is moderated by the level of education and experience of the entrepreneur as well as the dynamism of the environment in which the firm operates: education, experience and environmental dynamism magnify the effect an entrepreneur's growth motivation has on the realization of firm growth. Or, to put it more strongly: in order to grow a new business, growth intentions, resources, and opportunities are necessary conditions. In practice, it remains very hard to identify high-growth firms in advance. Recent research found some tendencies: for example opportunity based entrepreneurship, the availability of a large information set, and a spatially broad market orientation in the start-up phase distinguishes entrepreneurs of future high growth firms from entrepreneurs of low growth firms (Vivarelli 2004; Stam and Schutjens 2005; Smallbone et al. 2002).

These insights on the role of growth ambitions of entrepreneurs and initial conditions of high growth start-ups have important policy implications. It is imperative that general

policy measures are so designed that only those who react in the intended way are rewarded. If the self-employed with relatively low ambitions get the benefits, reactions that run counter to the intentions of the policy are not unlikely. Subsidizing entrepreneurs and new firms in general might bring about a major bias in the process of market selection. This could include *substitution* as well as *deadweight* effects (Santarelli and Vivarelli 2002; Vivarelli 2004). A deadweight effect refers to the situation in which less efficient or less ambitious entrepreneurs are given subsidies, and remain in the market as long as they can use the subsidy; these entrepreneurs do not need such subsidies for improving their business. A substitution effect arises when less efficient entrepreneurs are given an artificial seedbed, while market competition would have induced them to leave the market. These effects advocate a policy oriented towards ambitious entrepreneurs. This is discussed in the next section.

3. Public policy aimed at high growth start-ups

Due to the important economic, social, and political roles new and small firms play in most economies, governments at all levels – federal, state/regional, and local – have designed strategies to support entrepreneurial activity. One of the most important questions regarding entrepreneurship policy is whether to stimulate new firm formation, to help existing firms survive, or to focus on (potentially) growing firms (cf. Reynolds et al. 1994). Next, it is also important to decide on whether to aim for generic policy, or to focus on particular regions or industries (cf. Stam 2005). Of course prior to any public policy should be the establishment of a legal framework, a "rule of law" (cf. De Soto 2001). This legal foundation is often taken for granted, but is often not in place in developing and transition countries. Perhaps the first question must be whether governments should be involved in supporting entrepreneurs at all. Why should governments do more than enhancing the general investment climate? So-called market failures are often used to legitimise entrepreneurship policy (Storey 2003; 2006). In the specific context of public policy aimed at (potential) high-growth firms, especially information imperfections and externalities may be important reasons for policy interventions.

With regard to information imperfections, entrepreneurs might have too negative expectations concerning the consequences of growth, and they might not realise the private benefits of obtaining expert advice from "outside" specialists. There might also be significant information imperfections at the side of financial institutions, which are unable to assess the

viability and growth potential of new firms, and (on balance) overestimate the risk of lending to entrepreneurs of (potential) high growth firms.

Positive externalities may be present when social returns of certain economic activities exceed private returns. Entrepreneurs may not undertake projects which, whilst in the interest of society as a whole, yield the firm insufficient returns. The role of public policy (e.g. subsidy) is to make it privately worthwhile for the firm to undertake the project, enabling society as a whole to benefit. In the context of high growth firms, it might be that entrepreneurs do not pursue certain projects, because the risks are too high (new technology), or because they cannot fully appropriate the returns (innovation). Public policy could raise the private benefits of these projects in order to produce the social benefits, e.g. job creation and improved national productivity.

Sometimes markets are missing to a large extent, which has especially been said of certain financial markets in Europe. A lack of venture capital or a lack of opportunities for Initial Public Offerings (IPOs) at the national stock exchange may hamper the high-growth of new firms. In the US, during the 1990s, access to finance – and in particular venture capital – played an important role in nurturing new high growth firms. In Europe, financial markets are still relatively fragmented and venture capital markets are less developed. This increases financial costs and reduces the availability of capital necessary for the growth of start-ups (European Commission 2003a).

However, one could still wonder why public policy should be aimed at high-growth firms, and not on entrepreneurship (or innovative entrepreneurship, see EIM 2002) in general. The arguments against targeting (potential) high-growth firms are (Bridge et al. 2003: 293-295):

1- Selecting potential high-growth firms is too difficult.[1]
2- Venture capitalist are able to pick winners, with the inclusion of a considerable number of potential winners that turned out to be losers (cf. Baum and Silverman 2004), while public policy would seek to back all the winners and avoid any losers.
3- Start-ups in general deserve policy support, due to their seedbed function, unequal access to finance and information, their employment creation (still most of the jobs in the small business sector come from non high-growth firms), and their effect on regional prosperity in the long run (see also Fritsch and Mueller 2004; Van Stel and Suddle, 2006).
4- What is needed is an enterprising culture that has effect on all layers of society: new firms, small firms, large firms, public organizations.

However, there are at least as many arguments in favour of targeting (potential) high growth firms (Bridge et al. 2003: 292-293):

1- Targeting increases the *effectiveness* and *efficiency* of support measures. Focusing resources on a small group of ambitious entrepreneurs – i.e. where they are most needed and where they can produce the best results – is more effective than more generalised support. By applying support only to growth firms, the total requirements, and its cost, are reduced. This increases efficiency as a sufficient impact is made with limited resources.
2- It provides a clearer strategic focus on the needs of high growth businesses; high levels of expertise are more likely to be developed both in the public sector as well as in the related support fields (such as venture capitalists, bankers, and consultants).
3- More start-ups are not needed. In many European countries the number of start-ups has already increased enormously in the last two decades (Bosma and Wennekers, 2003).
4- Supporting start-ups distorts the market mechanism.

In the next section we will focus on how public policy aimed at high growth firms is formulated in two particular countries, the United States (as a 'role model' country with respect to high growth firms policies) and the Netherlands (the home country of the authors).

4. Public policy aimed at high growth firms in the United States and the Netherlands

Public policy has played a major role in the high number of high-growth start-ups in the US (Von Bargen et al. 2003). A mix of public policies, often unintentionally, have had a profound influence on the creation of a US entrepreneurial economy. Four key areas can be distinguished (Von Bargen et al. 2003, 316-319; cf. Chesbrough 1999):

1. Creating financial markets to fund growth companies;
2. Providing R&D and intellectual property protection;
3. Investing in technically talented people, and;
4. Opening new markets and easing entry for growth companies.

Policy makers in the US have made critical changes to the securities, banking, bankruptcy, tax and pension laws, as well as created new programs to fund businesses directly in order to improve the access to capital in the start-up, early stage and venture capital stage of firm development. Moreover, policies have been initiated to increase market liquidity. First, the creation of NASDAQ has greatly enhanced investor liquidity and, consequently, businesses' ability to raise capital in public markets. Second, and more in general, accounting, antitrust, and tax law treatment for mergers and acquisitions have provided avenues for investor liquidity.

One important source of opportunities for high-growth start-ups is the changing knowledge base of a society (Audretsch and Lehmann 2005). Many of the leading industries in the US, including biotech, computer software, and aerospace, can be traced directly to government R&D funds. Universities and research labs have also gained the ability (via the Bayh-Dole, Stevenson-Wydler, and National Competitive Technology Acts) to licence for commercial use the technologies developed with federal funds. Multiple changes to the patent and copyright laws have been instrumental to enhancing intellectual property protection for entrepreneurial innovations.

As a legacy of the cold war, federal policy has been stimulating the expansion of science and engineering expertise for a long time. This has been boosted by liberal immigration policies, that allowed large numbers of technically trained immigrants to join or even initiate entrepreneurial efforts (see Saxenian 2002). Next to these policy efforts to increase the number of technical talents, high-growth entrepreneurship is facilitated by policy that creates flexible labour markets (see Chesbrough 1999).

Finally, the huge internal market – enabled by the Uniform Commercial Code (UCC), completed in 1964 – allows entrepreneurs to do business in an enormous home-market. Next to this large open (territorial) market, government intervention to deregulate leading industries – like the airline industry, the package delivery industry, the trucking industry, and the telecommunications industry – in the 1980s has had a large impact on high growth opportunities.

Public policy aimed at high-growth firms is often legitimized by an unfavorable ranking in international hitlists of (potentially) fast-growing firms. This is also the case in the Netherlands, (EFER 1998; Ministerie van Economische Zaken 1999b; Ehrhardt et al. 2004). In the yearly international Adult Population Survey of the Global Entrepreneurship Monitor (GEM) entrepreneurs are being asked whether they expect to employ 20 employees or more

within five years after the start of their firm. In the Netherlands the share of potential high growth (early-stage) entrepreneurs in the adult population in 2005 is 0.26%. This is rather low in comparison with the average of the OECD-countries participating in GEM: 0.61%. In a European context, 0.47% expects to employ 20 or more employees within five years after the start of their firm. Countries that are much more entrepreneurial, like the US and New-Zealand, have a share of potential fast growers of respectively 1.41% and 1.42% (Autio 2005). As long as the Netherlands keeps lagging behind the other benchmark countries, much more policy efforts are said to be needed in order to improve this 'backward' situation. In order to stimulate growth ambitions in the Netherlands, the government has studied high growth firms and the specific additional bottlenecks that these firms experience in comparison with regular start-ups. Peeters and Verhoeven (2005) report that the group of high growth firms in the Netherlands is relatively small (9%), compared to the average of the European countries (15%).[2] Specifically, three major bottlenecks for high growth firms occur:

1- Fast growing firms have difficulties in getting qualified employees. The employees have to function effectively in a very dynamic environment. It also takes more time and efforts to acquire and dismiss employees;
2- Fast growing firms have difficulties in getting funding or capital against reasonable conditions. Banks are distant, because they perceive a greater risk. For the target group, it is also not always clear which subsidies and regulations exist for them and can benefit them;
3- Finally, fast growing firms experience, more often than other firms, difficulties in the field of management and organisation. The division of tasks is often unclear and this makes it hard to delegate tasks.

Support for high growth firms is currently one of the three pillars of entrepreneurship policy in the Netherlands (next to start-ups and business closures/transfers; Ministerie van Economische Zaken 2003; 2004; 2005). The major aims of this high growth firms policy are to achieve more and better high growth firms, and the two indicators used for these two aims are the number of high growth firms and a reduction of the administrative burden (Ministerie van Economische Zaken 2004: 11). The policy initiatives mainly provide *financial support*, *advice* and *networks* to support the high growth firms.

More specific policy measures have been the Growth Plus and Fast Growth Programmes, which involved networking between, coaching of, and advice to entrepreneurs

of high growth firms (Ministerie van Economische Zaken 2003). These programmes originated from the European Growth Plus organization, which was founded in 1997 with the aim of promoting entrepreneurship throughout Europe by identifying top performers and role models and supporting them by sharing best practices and providing networking opportunities and political lobbying support. These top performers have annually been identified with the ranking of Europe's 500 fastest growing entrepreneur-led firms. Especially this networking among peers and mentoring by experienced entrepreneurs/managers has been recognized in several contexts as an effective and efficient mechanism to improve the growth of new firms (Smallbone et al. 2002; Fischer and Reuber 2003). The increased visibility of entrepreneurs of high growth firms, acting as role models, might reduce the negative expectations concerning the consequences of growth; in this respect, successful role models may have a positive effect, especially on young people early in their occupational career.[3]

The most recent policy actions (in 2005) have been the development of a national programme of Masterclasses for entrepreneurs of high growth firms, and the start of a Business Angel Programme that aims to connect informal investors and ambitious entrepreneurs (Ministerie van Economische Zaken 2005). Next to this public initivative, there is a private initiative – "Port4Growth" - developed by ING, Euronext, FEM Business and Deloitte as participating organisations. Port4Growth offers a community for high growth firms and provides the infrastructure to reach other high growth firms and relevant subcontractors. Furthermore, it provides exposure possibilities for the firms involved.

A mixture of technology policy and high-growth firms policy can also be observed. This is legitimised by the positive externalities involved in stimulating New Technology Based Firms (NTBFs, see e.g. Storey and Tether 1998), as these firms may be able to turn scientific knowledge into valuable products and processes (cf. Acs et al. 2005). However, this commercialisation of scientific knowledge often necessitates the development and growth of the production and marketing capabilities of these NTBFs. Two major impediments to the growth of these firms are the difficult appropriation of the value of these innovations, and the lack of management skills of the entrepreneurs involved. If these impediments are not taken away, valuable innovations may never be introduced into society. In the Netherlands this mix of technology policy and high-growth firms policy has been central in the policy initiatives to stimulate the growth of new firms in biotech (Biopartner Programme: www.biopartner.nl; van Dongen et al., 2005) and information and communication technology (ICT) (Twinning Programme: Hulsink and Elfring, 2000). These initiatives have recently been integrated in the TechnoPartner Programme (www.technopartner.nl). The TechnoPartner Programme has

become operational in mid-2004 and aims for more effective spin-offs from research institutes. Besides the encouragement of the exploitation of knowledge by research institutes, this programme aims to improve the capital market for NTBFs. Furthermore, NTBFs will get more personalised and effective information and advice. Third, the government is investigating whether the American SBIR scheme (Small Business Innovation and Research scheme; see e.g. Audretsch 2003; Lerner 2003) can be applied in the Netherlands. The SBIR scheme aims to stimulate research and development by innovative SMEs. In order to do so, the scheme subsidises the development of innovative ideas, the development of prototypes and provides an official quality endorsement at the moment of the commercialisation of the product. This programme is likely to stimulate the growth of new and small technology based firms.

Unfortunately, policy interventions to stimulate high-growth firms are hardly evaluated. This makes it hard to derive normative implications from this overview of public policy aimed at high growth firms. The least we can do is investigating whether the prevalence of ambitious entrepreneurs has an effect on national economic growth at all. In the next sections we will present empirical evidence on this issue.

5. Data and research method

It is generally acknowledged that there are differences in the distribution of entrepreneurship across countries. Studies exploring differences in entrepreneurship across countries often focus on the incidence of new firm registration or self-employment, which may not be reliable indicators when applied to transition and developing countries with significant informal economies and fewer alternatives to self-employment. For these reasons we have used the *Total Entrepreneurial Activity* (TEA) indicator, 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. In the current study we investigate whether the presence of ambitious entrepreneurs is a more important determinant of national economic growth than entrepreneurial activity in general. Our empirical analysis builds on Van Stelet al. (2005). They investigate whether TEA influences GDP growth for a sample of 36 countries. The authors find that the TEA index indeed affects 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 index, we will also use the TEA *high growth* rate and the TEA *medium growth* rate as independent variables and compare their impact on economic growth with the impact of the general TEA index. The data and model used in this study are described below.

We use a sample of 36 countries participating in the Global Entrepreneurship Monitor (GEM) in 2002. Data on six basic variables are used in our model: total entrepreneurial activity (TEA), TEA medium growth, TEA high growth, growth of GDP, per capita income, and the growth competitiveness index (GCI). The sources and definitions of these variables are listed below.

Total 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. The TEA high (medium) growth 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 expects to employ 20 (6) employees or more within five years after the start of the firm*. Data on total entrepreneurial activity are taken from the GEM Adult Population Survey for 2002.

Growth of GDP (ΔGDP)

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. We refer to McArthur and Sachs (2002) for details about this index.

We investigate whether (high growth) entrepreneurship 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 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.[4]

Following Van Stel et al. (2005) we allow for the possibility of different effects for highly developed and developing countries. In addition we also test whether the effect of TEA is different for transition countries.[5] TEA rates may reflect different types of entrepreneurs in countries with different development levels, implying different impacts on 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) and (2). These equations are estimated separately by OLS. The hypothesis of a more positive effect for rich countries corresponds to coefficient b_1 (b_2) being larger than coefficient c_1 (c_2). Furthermore, the hypothesis that ambitious entrepreneurs contribute more to national economic growth than entrepreneurs in general corresponds to b_2 (c_2) being larger than b_1 (c_1).

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

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

To illustrate the data at hand, Table 1 provides the TEA rates and the TEA medium and high growth rates in 2002 as well as the average annual growth rates of GDP over the period 2002-2005. Furthermore, in Figures 1 and 2 the TEA rate and the TEA high growth rate are plotted against the growth rate of GDP. In these figures, the names of those countries that rank high on TEA and/or on GDP growth are indicated.

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

	TEA rate	TEA medium growth rate (6+)	TEA high growth rate (20+)	Average GDP growth rate 2002-2005 (%)
United States	10.51	4.55	2.13	3.00
Russia	2.52	1.80	1.44	6.18
South Africa	6.54	2.71	1.73	3.60
Netherlands	4.62	1.85	1.04	0.60
Belgium	2.99	0.92	0.52	1.53
France	3.20	1.29	0.61	1.43
Spain	4.59	2.03	0.77	2.98
Hungary	6.64	2.57	1.67	3.50
Italy	5.90	2.07	1.65	0.48
Switzerland	7.13	3.02	1.30	0.60
United Kingdom	5.37	2.25	1.27	2.40
Denmark	6.53	2.97	1.13	1.45
Sweden	4.00	1.45	0.61	2.43
Norway	8.69	2.87	1.20	1.88
Poland	4.44	1.19	1.19	3.40
Germany	5.16	2.93	1.79	0.58
Mexico	12.40	2.70	0.54	2.40
Argentina	14.15	4.22	2.55	3.60
Brazil	13.53	4.65	3.08	2.65
Chile	15.68	9.64	5.07	4.48
Australia	8.68	2.74	1.56	3.18
New Zealand	14.01	4.83	2.21	3.85
Singapore	5.91	3.17	1.59	4.23
Thailand	18.90	3.84	1.82	5.45
Japan	1.81	0.91	0.45	1.45
Korea	14.52	6.11	3.38	4.63
China	12.34	6.09	4.24	9.08
India	17.88	4.14	2.73	6.63
Canada	8.82	3.41	2.01	2.73
Ireland	9.14	3.16	1.41	5.00
Iceland	11.32	5.47	3.86	3.28
Finland	4.56	1.57	0.82	2.50
Slovenia	4.63	2.51	1.54	3.58
Hong Kong	3.44	1.45	0.46	4.88
Taiwan	4.27	2.42	1.63	4.08
Israel	7.06	4.53	2.90	2.28
Mean	*8.11*	*3.17*	*1.78*	*3.22*
Standard deviation	*4.59*	*1.78*	*1.10*	*1.84*

Sources: GEM and IMF.

From Table 1 and Figures 1 and 2 it can be seen that the ranking of countries in terms of TEA or TEA high growth may be quite different. For instance, while China ranks ninth in terms of TEA, it ranks second in terms of TEA high growth. In Section 6 we will investigate whether TEA and TEA high growth affect national economic growth differently.

Figure 1: TEA rates versus GDP growth rates

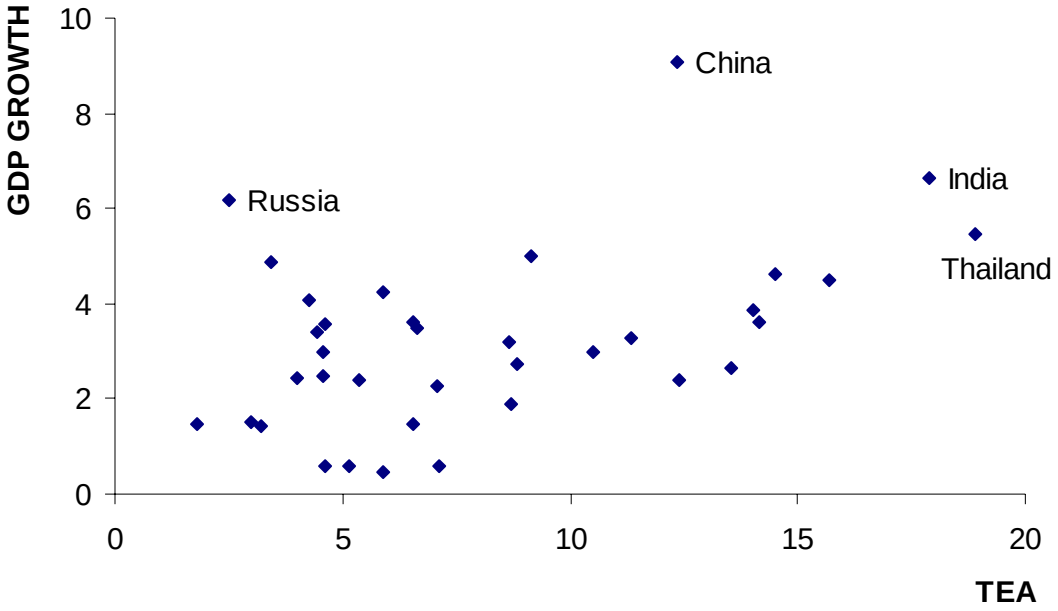
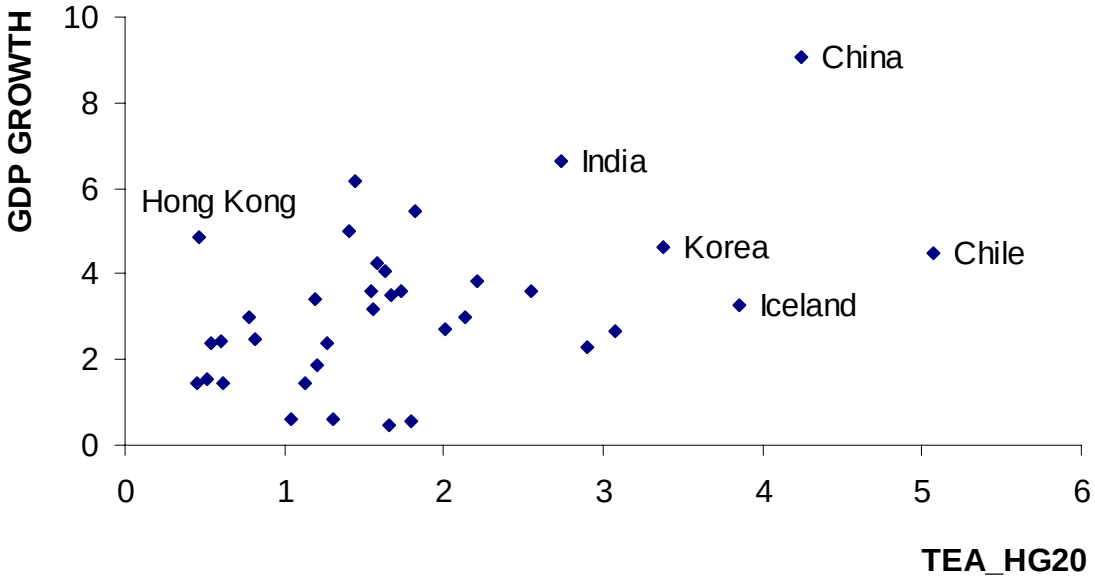


Figure 2: TEA high growth rates (20+) versus GDP growth rates



6. Entrepreneurial growth ambitions and national economic growth

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

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

TEA	Model 1	Model 2	Model 3
Constant	19.6 **	26.1 **	22.2 **
	(4.2)	(3.0)	(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 **	-2.4 **
	(2.8)	(2.7)	(2.6)
GCI	.62	.64	.63
	(0.7)	(0.8)	(0.7)
lagged gdp growth	.37 **	.30 **	.22
	(2.9)	(2.1)	(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.

** Siginificant at a 0.05 level

Table 3: Explaining economic growth from TEA medium growth rate (growth ambition > 6 employees within 5 years); N=36.

TEA medium growth (6+)	Model 1	Model 2	Model 3
Constant	19.8 **	22.0 **	21.5 **
	(4.6)	(3.5)	(4.5)
TEA_hg6	.17		
	(1.6)		
TEA_hg6 rich		.22 *	
		(1.8)	
TEA_hg6 poor		.12	
		(0.9)	
TEA_hg6 highly developed			.26 **
			(2.2)
TEA_hg6 transition			.50 **
			(3.1)
TEA_hg6 developing			.090
			(1.0)
log (GNIC)	-2.2 **	-2.4 **	-2.4 **
	(2.9)	(2.7)	(3.3)
GCI	.58	.58	.74
	(0.7)	(0.7)	(0.9)
lagged gdp growth	.35 **	.33 **	.20
	(2.6)	(2.3)	(0.9)
R^2	.638	.641	.679
adjusted R^2	.592	.582	.612

Notes are as in Table 2.

Table 4: Explaining economic growth from TEA high growth rate (growth ambition > 20 employees within 5 years); N=36.

TEA high growth (20+)	Model 1	Model 2	Model 3
Constant	19.8 **	19.5 **	20.0 **
	(4.3)	(2.9)	(3.5)
TEA_hg20	.27		
	(1.4)		
TEA_hg20 rich		.25	
		(1.1)	
TEA_hg20 poor		.28	
		(1.0)	
TEA_hg20 highly developed			.29
			(1.3)
TEA_hg20 transition			.70 **
			(2.7)
TEA_hg20 developing			.17
			(0.8)
log (GNIC)	-2.2 **	-2.2 **	-2.3 **
	(2.9)	(2.3)	(2.9)
GCI	.68	.68	.90
	(0.8)	(0.8)	(1.1)
lagged gdp growth	.34 **	.34 **	.22
	(2.4)	(2.3)	(1.0)
R^2	.637	.637	.667
adjusted R^2	.590	.576	.598

Notes are as in Table 2.

Table 2 confirms earlier findings of Van Stel et al. (2005) that it is important to distinguish between different groups of countries. While for rich countries the impact of entrepreneurial activity is significantly positive, the impact for poor countries is effectively zero.[6] Furthermore, the three tables reveal three important results. *First*, as hypothesized, the presence of ambitious entrepreneurs indeed seems to be more important for achieving GDP growth than entrepreneurship in general. Comparing the coefficients of the various TEA rates across the tables, we see that in each of the three model variants the impact of TEA medium growth (growth ambition of 6 employees) is higher compared to the impact of TEA in general, while, in turn, the impact of TEA high growth (growth ambition of 20 employees) is

still higher. For instance, for the group of highly developed countries in Model 3, the TEA rate has a coefficient of 0.11 (Table 2), while the coefficients of the TEA medium and high growth are 0.26 and 0.29 (Tables 3 and 4), respectively.

Second, having more entrepreneurs with high growth ambitions seems to be particularly important in transition countries. Both the magnitude and the statistical significance of the estimated coefficient point at a stronger impact compared to highly developed or developing countries (see Tables 3 and 4). There are many reasons that could explain the importance of high growth entrepreneurs in transition countries (cf. Smallbone and Welter 2006). First, there are many entrepreneurial opportunities in formerly state-dominated sectors. Second, many highly qualified individuals lost their jobs at state-financed organizations (e.g. universities, enterprises, government-services). Third, there are many highly qualified (potential) entrepreneurs in these countries (especially in Eastern European countries), who do not face the opportunity costs of working for large public or private organizations. Fourth, those highly qualified (potential) entrepreneurs are also well connected to the power networks that were, and to a large extent still are important in the political and economic arena of these countries, which takes away some barriers for high growth firms in these countries. Summarizing, it may be argued that in transition economies high growth opportunities are more widely available and hence, a higher number of ambitious entrepreneurs willing to act on these opportunities may be particularly fruitful for achieving growth in these countries. However, we should be aware of the large diversity in the group of transition countries, which comprises countries like Russia and China, as well as Hungary and Slovenia.

Third, comparing the coefficients of the various TEA metrics over the three tables, it may be argued that it is important to have a substantial number of entrepreneurs with growth ambitions per se but that it is not so important whether these entrepreneurs expect to employ at least 6 employees or at least 20 employees. The differences between coefficients in Tables 3 and 4 are not that large. Also note that the model fit in Table 3 (TEA medium growth) is higher than that in Table 4 (TEA high growth). Especially in developed countries moderate growth entrepreneurs seem to be important. This might reflect the more mature industry structure in these countries, leaving more space for incremental innovations and moderate growth opportunities than the more dynamic high growth opportunities that can be found more often in transition countries.

Our regression results should be interpreted with some care as the analysis is based on a limited number of observations (36 countries).[7]

7. Discussion and conclusion

In this paper we investigated whether the presence of ambitious entrepreneurs is a more important determinant of national economic growth than entrepreneurial activity in general. The results of our empirical exercises suggested that ambitious entrepreneurship contributes more strongly to macro-economic growth than entrepreneurial activity in general. We found a particularly strong effect of high-expectation entrepreneurship for transition countries.

The intermediate-income or transition countries occupy a special position. Transition economies have a highly educated labor force, a relatively low GDP, and a highly turbulent economy. Bartelsman et al. (2005a) have shown that the magnitude of firm creation and destruction is larger in transition countries than in industrial countries: many new smaller firms have been replacing obsolete larger units inherited from the central-planning period. Especially Hungary, Estonia, Latvia and Slovenia have experienced a strong creative destruction process, with strong growth after the entry and a significant contribution by new entry (and exit) to productivity growth (Bartelsman et al. 2005a). New firms in transition countries not only displace obsolete incumbents but also fill in new markets, which were either nonexistent or poorly populated in the past. Our study suggests that in transition countries, especially high growth entrepreneurs make an important contribution to economic growth. The high degree of environmental dynamism in these countries - which is likely to positively affect the level of growth expectations and realizations of entrepreneurs in these countries (cf. Wiklund and Shepherd 2003) – requires ambitious and well-connected (especially in the Russian and Chinese context) entrepreneurs in order to translate these abundant opportunities in economic growth. This entrepreneurial growth process is facilitated by the relatively high level of human capital but still relatively low opportunity costs of self-employment of the adult population in these countries.

It would be naïve to recommend to focus policy completely on ambitious entrepreneurs and their (potentially) fast-growing firms. Economic growth is most likely achieved with a mix of small but high-growth firms and large, mature firms (Baumol 2002; Nooteboom 1994). On the one hand, the Netherlands, just like most European countries, has sufficient large firms, but seems to be lacking a sufficient number of high-growth new firms (see Bartelsman et al. 2005b). On the other hand, our analyses show that rich and highly developed countries like the Netherlands may have more to gain (with respect to economic growth) with entrepreneurial activity in general, and perhaps a focus on moderately ambitious entrepreneurs, than with stimulating high growth entrepreneurs.

In this paper we assumed that the presence of ambitious entrepreneurs leads to economic growth via the successful development of their firms. Indeed, our empirical analysis does suggest that high-expectation entrepreneurs contribute more strongly to economic growth at the *macro-level* than entrepreneurs in general. This effect seems to be particularly strong in transition countries. However, we could not directly trace the assumed success at the *micro-level* of analysis. It would be worthwhile to follow the high potential startups to establish whether such firms fulfill their promised potential and what factors influence their subsequent success or failure. Such research would cast light on the nature of firm growth, including the characteristics of individuals involved, the effect of environmental factors and the long term developmental effects of these high potential start-ups. We should also be careful not to regard high ambitions as valuable in itself, as entrepreneurs may also be too ambitious in comparison with the financial resources that they have access to, which leads to a premature death of the new firm (Littunen 2000). If the ambitions would turn out to be unrealistic it could even be the case that the overoptimistic entrepreneurs actually contribute negatively to macro-economic growth: social welfare would even be enhanced by discouraging entry into entrepreneurship (DeMeza 2002). Understanding the transition from growth ambitions into growth realizations allows more effective policies to be drawn to encourage and stimulate entrepreneurial activities with growth potential. To this end more longitudinal research at the micro-level of analysis will be required.

Notes

[1] The difficulty to predict the growth of start-ups has led the English DTI to emphasize entrepreneurs with growth aspirations in her competitiveness policy (DTI 1998). The main rationale for this programme is the potential welfare gains to the economy which will result from enabling more new businesses with growth potential to achieve significant growth (see Smallbone et al. 2002). There is an implicit assumption of market failure in the sense of the support needs of high-growth start-ups not being adequately met by the private sector. The programme is also legitimated by its additionality to the existing start-up support. High growth potential of start-ups is defined as an aspiration of £1 million sales per annum. It is estimated that only about 1% of new business start-ups in the United Kingdom each year achieve annual sales of this amount. Achieving £150 000 sales within twelve months is provided as a stepping stone goal toward this threshold.

[2] These figures relate to the percentage of firms within the population of medium-sized firms (50-1000 employees) that grow their business with at least 60% (in terms of employment) over a period of three years. The figures relate to NACE codes C-K excluding J (sectors of economy) and to the period 1998-2001 (see Peeters and Verhoeven, 2005, p. 27).

[3] According to Davidsson (1991, p. 424) persuasive attempts to stimulate growth motivation are likely to be most effective if directed at younger firms and younger owner-managers. Younger firms have a stronger objective need for expansion, and their values, attitudes, and 'company cultures' are less likely to be firmly held. Younger individuals are also likely to be more sensitive to growth objectives than older entrepreneurs that have since long defined and lived up to a role as the manager of a stable firm.

[4] When the growth expectations for the national economy are good, more entrepreneurs may expect to grow their business in the years to come. Hence, there may also be a (reversed) effect of economic growth on (high expectation) entrepreneurship. To limit the potential impact of reversed causality we include lagged GDP growth as an additional explanatory variable. We also measure TEA rates in a year (2002) preceding the period over which the dependent variable is measured (2002-2005). Still, the possibility of reversed effects cannot be ruled out completely.

[5] 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.

[6] Van Stel et al. (2005) refer to a possible lack of (foreign) larger companies in these poorer countries as a possible explanation for the zero effect of entrepreneurial activity.

[7] In particular, results for Model 3 in Tables 2-4 might be sensitive to outliers. As a test of robustness we estimated Model 3 leaving out one country at a time, i.e. we computed 36 auxiliary regressions, where each regression uses 35 observations (each time leaving one of the 36 countries out). For TEA, using the full sample, we found a significant positive impact for the highly developed countries (see Table 2). In the auxiliary regressions we always found a positive impact for the highly developed countries which was significant at least at the 10% level, except for the regression excluding Korea. Here we found a coefficient of .088 and a t-value of 1.5. Similarly, for TEA medium growth, using the full sample, we found a significant positive impact for both the highly developed and the transition countries (see Table 3). In the auxiliary regressions we always found a significant positive impact for the highly developed countries except when Korea was excluded from the sample (coefficient .20; t-value 1.4). For the transition countries we always found a significant positive impact except when China was excluded from the sample (coefficient .56; t-value 1.4). Finally, for TEA high growth, using the full sample, we found a significant positive impact for the transition countries (see Table 4). In the auxiliary regressions we always found a significant positive impact, except when China (coefficient .76; t-value 1.2) or India (coefficient .60; t-value 1.4) were excluded. Note however that in all these cases, despite their insignificance, the estimated coefficients are close to the full sample estimates in Tables 2-4. Furthermore, the Jarque-Bera test on the normality of disturbances is passed for all models reported in Tables 2-4. Therefore we feel that our results are quite robust to the potential influence of outliers.

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