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**Is Entrepreneurship the Salvation for Enhanced Economic Growth?**

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**Is entrepreneurship the salvation for enhanced economic growth? A review of the empirical evidence of the effect of entrepreneurship on employment, productivity and economic growth.**

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## Abstract:

During the last decades, enhancing entrepreneurship has emerged as commonly used policy-measure in order to improve economic growth. However, is it true that entrepreneurship unambiguously can be claimed to improve economic growth? This paper intends to review the empirical evidence on the relationship between entrepreneurship on three measures of economic growth, employment, productivity and aggregate economic growth. The review shows that the studies that find no positive relationship between entrepreneurship and productivity growth have studied a relatively short period. Most studies that have studied a longer period (about ten years) provide rather clear evidence on the positive relationship between entrepreneurship and growth. Regarding the relationship between entrepreneurship and employment growth, the empirical evidence to some extent point in different directions. However, it must be concluded that in the long run there seems to be a positive relationship. A majority of the studies on the relationship between entrepreneurship and aggregate economic growth find a positive relationship. Studies that find a negative relationship usually employ non-harmonised self-employment rates as the measure of entrepreneurship.

## *1. Introduction*

In recent years, a strong belief among policy-makers that entrepreneurship is crucial for economic growth has emerged. Some politicians seem to regard improved levels of entrepreneurship the salvation for economies struggling with declining economic growth rates. To what extent does this belief rely on solid empirical evidence on the relationship between entrepreneurship and growth? Is it true that entrepreneurship unambiguously can be claimed to improve growth? Baumol (1990) raises the question whether entrepreneurship always is beneficial for the society. He distinguishes between productive, unproductive and even destructive entrepreneurship. It can be argued that an operationalisation of these concepts implies that productive entrepreneurship is entrepreneurship which has a positive effect on GDP while destructive entrepreneurship has a negative effect of GDP (Desai and Acs, 2007). In fact, previous empirical findings give a somewhat scattered picture of the role of entrepreneurship for economic growth. Audretsch et al. (2006) provide a somewhat contradictory picture of the role of entrepreneurship for employment growth. At one point, the importance of new firms for stimulating employment growth is emphasised. However, later on the picture is somewhat altered and studies that show that for certain countries and certain time-periods the evidence is less convincing. Also Henrekson and Stenkula (2007) and Karlsson et al. (2005) find that the empirical evidence regarding the role of entrepreneurship for employment growth is unclear or even contradictory. Van Praag and Versloot (2007), on the other hand, present a research overview based on studies published in selected international journals and conclude that entrepreneurs are important to employment growth and productivity. Note that the overview by van Praag and Versloot (2007) also includes studies where entrepreneurship is measured in terms of small firms.

This paper intends to provide a comprehensive review of the empirical evidence on the relationship between entrepreneurship and three measures of economic growth, employment, productivity and aggregate economic growth. What is the empirical evidence and what are the policy implications? Can politicians pray for increased levels of entrepreneurship and expect to be rewarded with increased levels of growth?

As emphasised by for example Carree and Thurik (2003), entrepreneurship is a multidimensional concept and therefore particularly difficult to measure. Measures frequently

used in empirical work are new firm formation (e.g. entry), self-employment rates, or innovation (measured by for example R&D or patents) in small firms, firm size or entrepreneurship indices from the Global Entrepreneurship Monitor (GEM). Hence, in our literature review it is important to distinguish between studies that have used different measures of entrepreneurship. However, it should be noted that this review article does not intend to include studies using small firms as a measure of entrepreneurship. Evidently, small firms and new firms are highly interrelated phenomena's since most new firms are small. Nevertheless, being small does not necessarily imply being entrepreneurial. Hence, it is unfortunate that some of the previous empirical conclusions, especially regarding the relationship between entrepreneurship and employment growth, rely quite heavily on studies using small firms as a measure of entrepreneurship.<sup>1</sup>

This paper is organised as follows: Section two reviews the empirical evidence on the relationship between entrepreneurship and productivity. Section three discusses the role of entrepreneurship for employment growth. Section four reviews the empirical evidence on the aggregate economic level i.e. presents a number of cross-country and time series studies on the relationship between entrepreneurship and growth. Finally, we summarise the empirical evidence and discuss the implications for economic policy.

## *2. Entrepreneurship and productivity*

Empirical studies on the relationship between entrepreneurship and productivity growth usually distinguishes between the effects on total factor productivity (TFP) growth<sup>2</sup> and labour productivity (LP) growth. Ahn (2001) provides an extensive overview of the empirical results regarding importance of firm dynamics for productivity growth. Ahn (2001) concludes that in the short run the effect of new firm formation on productivity may actually be negative, but in the long run the new firms that actually survive are important to productivity growth. He also concludes that the importance of entry and exit of firms is more pronounced for TFP compared to LP. It should however be noted that most of the studies included in

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<sup>1</sup> Our choice of focus and importance of new firms are supported by a study by Haltiwanger and Krizan (1999).

They study the net employment growth in the U.S manufacturing industry and conclude that the employment contribution by small firms primarily are caused by new firms.

<sup>2</sup> OECD prefer to use the term multi factor productivity (MFP) growth

Ahn's overview refer to the manufacturing industry. An obvious reason for the lack of studies covering the service sector is that it is much more difficult to measure productivity in this sector compared to the manufacturing sector. Nevertheless, studies that actually are available for the service sector tend to show that firm dynamics seem to be even more important for productivity growth in this sector. Since the overview provided by Ahn (2001) includes the most important studies published before 2001, the rest of this survey will focus on studies published after 2001. A summary of the empirical findings is presented in table 1.

One frequently used method to estimate productivity contribution from different firms is decomposition analysis. Decomposition analysis usually distinguishes between the productivity contribution from innovation or re-organisation in existing firms, denoted internal re-allocation, and the contribution to productivity by external re-allocation. External re-allocation refers to the selection mechanisms associated with entry of more productive firms, exit of less productive firms or productivity gains due to that incumbent firm increase or decrease their market shares. Disney et al. (2003) compare the importance of technological and organizational change in incumbent firms with the role of market selection mechanisms for productivity growth. According to this study, the market selection mechanism contributes to about 80–90 percent of TFP growth in the manufacturing industry in Great Britain. Hedén (2005) presents a similar study as Disney et al. (2003) but for a selection of Swedish manufacturing firms and show that 60 percent of the LP growth and 50 percent of TFP growth are due to external re-allocation. Baldwin and Gu (2006) show that 70 percent of LP growth in Canadian manufacturing industry is due to external re-allocation. For the retail-trade sector in the U.S Foster et al. (2006) find that almost all LP growth in this sector can be derived from firm entry and exit. Hakkala (2006) find that for both LP and TFP growth, net entry account for the largest part of productivity growth. However, one must note that this study only covers large Swedish manufacturing firms. Scarpetta et al. (2002) are less convinced, in particular regarding the positive effect of external re-allocation, for productivity. They find that a large share of the increase in LP is due to internal re-allocation. On the other hand they conclude that firm exit is more important for productivity growth in mature industries, while entry is more important in industries with rapid technological change. Scarpetta et al. (2002) conclude that the contribution to TFP growth from internal re-allocation is somewhat smaller than the contribution to LP growth.

Andersson (2006) shows that as much as 90 percent of LP growth is due to internal re-allocation. This study covers the period 1997–2003 and includes both manufacturing and

service sectors. If we summarise the empirical results of the studies using the decomposition methodology presented above we conclude that studies which do not support the role of external re-allocation for productivity growth are those of Scarpetta et al. (2002) and Andersson (2006). What these studies have in common is that they use shorter periods in their analysis (only five years). Most of the other studies use data for at least ten years. In fact, Scarpetta et al. (2002) conclude that the short time period used in their study may be one important reason for why their results differ from previous studies.

In addition to the studies using the decomposition methodology there are a number of other studies that investigate the relationship between firm dynamics and productivity. Bosma and Nieuwenhuijsen (2002) analyse the importance of market turbulence (defined as entry and exit of firms) and TFP in the Netherlands. They find that market turbulence is positively related to TFP-growth in the service sector but no relationship is found for the manufacturing industry. Holtz-Eakin and Kao (2003) find a positive relationship between entry and productivity in the U.S using regional data. Callejón and Segarra (1999) find a positive relationship between turbulence of firms and TFP growth on both an industry and a regional level. Furthermore, Aghion et al. (2004) find a positive relationship between entry and productivity growth. Braunerhjelm and Borgman (2004) find that regional entrepreneurship (measured by self-employment) is important for regional productivity growth in Sweden. Aghion et al. (2006) show that firm entry has a positive impact on productivity growth in incumbent firms especially in industries close to the technological frontier. In particular, entry of technologically advanced foreign firms, seem to be important since they force incumbent firms to innovate and improve their productivity. For firms further away from the technological frontier there is instead a negative relationship between entry and encouragement of innovation and productivity improvements in incumbent firms. Finally, Brandt (2004) in one of the few available cross-country studies finds a positive relationship between entry and productivity. Brandt (2004) notes that the role of entry for both LP and TFP is more pronounced in the service industries.

**Table 1 Summary empirical studies on the relationship between entrepreneurship and productivity growth.**

Author(s)	Country and coverage	Time-period	Measure of productivity	Summary of results
Disney et al. (2003) <sup>3</sup>	Great Britain (manufacturing industry)	1982-1992	TFP LP	TFP: 80-90 percent of the increase are from external re-allocation LP: 50 percent of the increase are from external re-allocation
Hedén (2005)	Sweden (manufacturing industry, selection of firms)	1990-2000	LP TFP	LP: 60 percent of the increase are from external re-allocation TFP: 50 percent of the increase are from external re-allocation
Baldwin and Gu (2006)	Canada (manufacturing industry)	1979-1999	LP	LP: 70 percent of the increase are from external re-allocation
Foster et al. (2006)	US (retail trade)	1987-1997	LP	LP: Entry and exit account for almost all of the productivity increase.
Hakkala (2006)	Sweden (manufacturing sector, large firms)	1986-1996	LP	AP: 47 percent of the increase are from external re-allocation
Scarpetta et al. (2002)	10 OECD-countries (manufacturing industry and some service sectors)	1987-1992 and 1992-1997	LP TFP	LP: 50-85 percent of the increase are from internal re-allocation TFP: The main part of the increase (but less compared to LP) are from internal re-allocation
Andersson (2006)	Sweden (all industrial sectors)	1997-2003	LP	LP: More than 90 of the increase are from internal re-allocation
Bosma and Nieuwenhuijsen (2002)	The Netherlands (40 regions)	1988-1996	TFP	TFP: Turbulence (entry and exit) is positively related to productivity growth
Holz-Eakin and Kao (2003)	U.S (states)	1986-1998	LP	LP: Entry is positively related to productivity growth
Callejón and Segarra	Spain	1980-1992	TFP	TFP: Entry and exit has a positive effect on both industry and regional productivity.

<sup>3</sup> An earlier version of this paper is included in the overview by Ahn (2001)



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(1999)	(manufacturing industry)			
Aghion et al. (2004)	Great Britain	1980-1993	TFP	TFP: Entry is positively related to productivity growth
Braunerhjelm	and Sweden	1975-1999	LP	LP: Regional entrepreneurship (measured by self-employment) important for regional growth
Borgman (2004)	(70 regions)			
Aghion et al. (2006)	Great Britain (manufacturing industry)	1987-1993	TFP	TFP: Entry of technologically advance foreign firms is positive for productivity development in incumbent firms.
Brandt (2004)	9 EU countries	1998-2000	LP and TFP	LP and TFP: Positive relationship which is more pronounced for the service sector. Compared to the manufacturing industry.

### *3. Entrepreneurship and employment growth*

By the end of the 1970s, Birch (1979) published a study on the importance of small firms for employment growth. This study became highly influential to both researchers and policy-makers. According to Birch's study small firms, and in particular new firms, accounted for the lion's part of new jobs created in the U.S. This study was followed by several other studies trying to measure the role of small and new firms for employment growth (see e.g. Davidsson et al. 1994). Unfortunately, many of these studies do not explicitly distinguish between small firms and new firms. Recall that we in this review of the empirical evidence have decided to exclude this measure since we regard firm size as a less straightforward proxy for entrepreneurship (see e.g. van Praag and Versloot, 2007). Before we proceed to further review the empirical findings in this field, it is important to mention that the causal relationship between entrepreneurship and employment growth, can be expected to be dual. This implies that employment changes can be expected to be influential for entrepreneurship rates. For example, it clearly the case that the level of unemployment might influence the level of necessity-based entrepreneurship i.e. entrepreneurship induced due to lack of other opportunities of employment. However, as previously mentioned, this literature review chooses to focus on the employment effects of entrepreneurship. In addition, we have chosen to focus on studies that cover a substantial part of each economy studied. This implies that we exclude, for example, the study by Johansson, (2001) which focuses on the Swedish IT sector.

As previously mentioned, there are a few authors who have tried so summary the empirical results on the relationship between entrepreneurship and employment growth and their findings are in some cases contradictory. Additional frequently cited reviews worth mentioning are Caves (1998) and Geroski (1995). Caves (1998) emphasises that while the short-term employment effects of new firm formation may be small the effects may be much more important for long-term growth. Geroski (1995) claims that new firm formation does not seem to be important for employment growth in the manufacturing industry. Table 2 summarises the main findings of the empirical studies discussed below.

Few available studies use cross-country data to study the relationship between entrepreneurship and employment growth. The main reason for this absence of cross-country studies is the lack of comparable data across countries. Two exceptions are the studies by van Stel and Diephuis (2004) and Brandt (2004). Van Stel and Diephuis (2004) use data covering seven countries and find a positive relationship. However, it should be mentioned that they use net new firm formation. The employment effect of new firm formation is found to be larger in the manufacturing industry compared to the service sector. Brandt (2004) finds a statically significant relationship. However, the size of the effect is moderate. The study by Brandt (2004) includes nine EU-countries, but it should be emphasised that the study covers a very short period.

In contrast to the lack of cross-country studies, there are quite a few empirical studies at the country level available. Ashcroft and Love (1996) study the relationship between new firm formation and net employment growth in Great Britain during the 1980s and find a strong positive relationship. Fölster (2000) uses self-employment as a measure of entrepreneurship and find that increased levels of self-employment enhanced Swedish employment growth. Persson (2004) find that the net employment contribution by entering and exiting firms was positive, while the net contribution by incumbent firms was negative. Acs and Armington (2004) find a strong relationship between new firm formation and faster regional employment growth. However, this finding does not seem to be valid for the manufacturing industry. They also reflect on the fact that the immediate employment effect may be rather small since many newly established firms do not survive. However, this negative effect, due to the low survival of the new firms, is compensated by the growth of the surviving firms. Hence, a more dynamic perspective needs to be applied in order to reconcile the full employment effects of entrepreneurship.

Fritsch and Mueller (2004) provide such a dynamic perspective, which implies three types of employment effects of new firm formation:

- Direct effect: *The initial employment effects are of course positive due to the new firms hiring employees.*
- Selection mechanisms: *As previously mentioned many new firms do not survive. Furthermore, competition from new firms might force existing firms to close down or create prerequisites for mergers or acquisitions and job rationing. Hence, the net employment effect of new firm formation might be negative at this stage.*
- Indirect supply-side effects: *The establishment of a new firm do also influence the actions of already incumbent firms. An example is that new firms might bring new products or production methods to the market. As these products reach the market they cause improvements in production in other firms or might even stimulate further product or production innovations, which further increases efficiency. Certainly, these increases in competition, productivity and efficiency are positive for both consumers and producers. However, these improvements might imply a decrease in employment. Nevertheless, Fritsch and Mueller (2004) argue that the increased competition is positive for improved growth in the long run perspective. Furthermore, resources become idle and can be re-located to other markets. In summary, they conclude that the indirect employment effects of new firm formation might be positive. In fact, they can even be more important than the immediate employment effect of new firm formation.*

As previously pointed out the dynamic process described above is naturally a long-term process. According to Fritsch and Mueller (2004) it might take up to eight years before the economy experience the indirect employment effects. Baptista et al. (2005) report similar findings. A recent special issue of the journal *Small Business Economics* devoted to the discussion on the employment effects of entrepreneurship provide evidence from six countries.<sup>4</sup> Many countries seem to follow a similar pattern as the previously mentioned pattern described in Fritsch and Mueller (2004). However, the size of the employment effects may vary across countries and it may take up to ten years until the employment effect sets in (Fritsch, 2008).

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<sup>4</sup> U.S., Spain, Portugal, West Germany Great Britain and the Netherlands

An additional study which emphasises the long-term employment effects of entrepreneurship are Klette and Mathiasen (1996) study new firm formation as well as firm exit in the Norwegian manufacturing industry. It shows that firm dynamics have a relatively little influence on employment in the short-run but are very important for long-run employment growth. Audretsch and Fritsch (2002) find no significant relationship between new firm formation and employment growth in West Germany during the 1980s. However, they find a positive relationship for 1990s. Furthermore, they find that regions with high new firm formation rates during the 1980 are the regions with high employment growth during the 1990s. Hence, they claim that new firm formation is mainly important for long-term employment growth.

The empirical evidence presented so far gives a rather positive picture of the importance of entrepreneurship for employment growth. Other empirical evidence are however not that convincing. Van Stel and Storey (2004) find, in spite of a clear policy to stimulate new firm formation in Great Britain during the 1980s, no or even a negative relationship between entrepreneurship and employment growth in some areas. In addition, Fritsch (1997) find the importance of new firm formation for regional employment much smaller than expected. The initial effect was to some extent positive but during the following periods the effect became negative. Fritsch and Mueller (2008) emphasises that that there may be important regional variations in the response of new firm formation on employment growth. The regional environment in terms of density and regional productivity is found to be of great importance for the size of the employment effect of new firm formation. In regions with low productivity, the effect may be negative.

In summary, one must conclude that a majority of the empirical studies presented here provide evidence for a positive relationship between entrepreneurship and employment growth, at least in the long-term. Nevertheless, there are undoubtedly some questions marks regarding the positive employment effects of entrepreneurship since it has been shown that there may be important variations across industries, regions and periods.

**Table 2. Summary empirical studies on the relationship between entrepreneurship and employment growth.**

Author(s)	Country and coverage	Time-period	Measure of entrepreneurship	Summary of empirical evidence
van Stel and Diephuis (2004)	7 countries and 15 industries	1992-1999	Net new firm formation	Net new firm formation has a positive effect on employment growth.
Brandt (2004)	9 EU-countries	1998-2000	Entry	Statistically significant positive correlation between entry rates and employment growth (but the size was not that large)
Ashcroft and Love (1996)	Great Britain (64 regions)	1981-1989	New firm formation	Strong positive relationship between entry and employment
Fölster (2000)	Sweden (24 counties)	1976-1995	Self-employment	Self-employment positively related to total employment..
Persson (2004)	Sweden (3 industrial sectors)	1986-1995	New firm formation (plants)	The net employment contribution by entering and exiting firms is positive
Acs and Armington (2004)	U.S. (6 industries and 394 regions)	1991-1996	New firm formation	Strong relationship between new firm formation and regional employment growth.
Fritsch and Mueller (2004)	Germany (former West Germany) (326 districts)	1983-2002	Entry (plants)	Th indirect employment effects may be more important than the initial employment effect.
Baptista et al. (2005)	Portugal (30 regions)	1982-2002	New firm formation	New firm formation positively related to regional employment . The positive effect appears after eight years.
Klette and Mathiasen (1996)	Norway (manufacturing industry)	1976-1986	Entry and exit (plants)	Entry and exit have a small effect on employment in the short-run but are important in the long-run.

Audretsch and Fritsch (2002)	Germany (former West Germany)) (74 regions)	West	1983-1989 and 1993-1998	New firm formation	No significant relationship between new firm formation and regional employment growth during the 1980s. Positive relationship during 1990s.
van Stel and Storey (2004)	Great Britain (60 regions)		1980-1998	New firm formation	The employment effect is questionable especially as regards policies aimed at enhancing new firm formation.
Fritsch (1997)	Germany (former Germany) (75 planning regions)	West	1986-1989	Entry (plants)	Initially a positive effect compensated by a negative effect during the following periods
Fritsch and Mueller (2008)	Germany (former Germany) (74 planning regions)	West	1983-2002	New firm formation (plants)	The effect is dependent on regional conditions. The effect might be negative in regions characterised by low productivity.

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#### *4. Entrepreneurship and aggregate economic growth*

Reynolds et al. (1999) and Zacharakis et al. (2000) assign differences in entrepreneurship rates a crucial role for economic growth. They claim that about one-third to half of the differences in national growth rates are explained by variations in entrepreneurial activity. Yet, there is a lack of studies, which have studied the relationship between entrepreneurship and economic performance at the country level (Carree and Thurik, 2003). Data on economic growth measured by, for example, GDP is of course readily available for most researchers. Unfortunately, sufficiently consistent and comparable data on entrepreneurship across countries has been unavailable for a long time. During recent years, a number of initiatives that has tried to overcome this lack of data have emerged. Two frequently used data sources are the GEM study<sup>5</sup> and the COMPENDIA<sup>6</sup> research project. The GEM project was initiated in 1999 and the number of countries covered by the study has subsequently increased. The GEM project annually present an entrepreneurship index which claim to measure the entrepreneurial activity. The GEM data is based on surveys conducted in the different countries.<sup>7</sup> The COMPENDIA research project bases its data on self-employment rates gathered by OECD and adjust them in order to harmonise the data.<sup>8</sup> The number of empirical studies in this field can definitely be expected to increase further as the amount of comparable cross-country data and longer time series become available. Table 3 summarises the main findings of the empirical studies discussed below.

Blanchflower (2000) studies the relationship between self-employment and economic growth for 23 OECD countries during 30 years and finds a negative relationship. However, it should be noted that this study was criticised due to that fact that it used non-harmonised OECD data. Van Stel et al. (2005) uses the entrepreneurship measure from the GEM study. This study distinguishes between the effects of entrepreneurship on growth for countries that have reached different levels of development. In countries regarded as relatively rich, they find a positive

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<sup>5</sup> Global Entrepreneurship Monitor

<sup>6</sup> COMPARative ENTrepreneurship Data for International Analysis. Further information about the COMPENDIA database is available in van Stel (2005)

<sup>7</sup> Further information about the research method can be found on their website: [www.gemconsortium.org](http://www.gemconsortium.org)

<sup>8</sup> Data and further information on this dataset is available at the EIM research group website: [www.eim.net](http://www.eim.net)



relationship between entrepreneurship and economic growth, while the relationship was negative in less developed countries.

Carree et al. (2002) raise the question whether there is an 'equilibrium' level of entrepreneurship in a country.<sup>9</sup> In their empirical study, they find that entrepreneurship below as well as above the 'equilibrium' level have negative consequences for aggregate economic growth. An extended version of this study again finds that entrepreneurship levels below the equilibrium level have a negative effect on growth. However, in this study they do not find any negative effect of deviations above the equilibrium level of entrepreneurship (Carree et al. 2007).

An extensive study, using World Bank data from 84 countries, by Klapper et al. (2007) finds a positive relationship between self-employment rates and economic growth. Also Acs et al. (2004) find a positive relationship between entrepreneurship and economic growth. Reynolds et al. (2004) use GEM data on entrepreneurship and find that initially there is a positive but rather weak relationship between entrepreneurship and GDP growth. However, this relationship seems to grow stronger over time. Another study emphasising the dynamics and long-term effects is the study by Carree and Thurik (2008). The dynamics and results presented are similar to the previously mentioned study by Fritsch and Mueller (2004) on the employment effects i.e. that the initial effect is positive but then become negative but again positive in the long run. Carree and Thurik (2008) find that the net effect is positive.

Some studies try to distinguish between different types of entrepreneurship hypothesising that different kinds of entrepreneurship are more or less important for the ability to create aggregate economic growth. Reynolds et al. (2004) distinguish between opportunity- and necessity-based entrepreneurship where necessity-based entrepreneurship refers to entrepreneurship initiated by that fact that the entrepreneur lack other employment opportunities, for example due to unemployment. Interestingly enough the relationship between opportunity based entrepreneurship and growth seems to decrease over time while the relationship between necessity-based entrepreneurship and growth tends to increase over time. Wong et al. (2005)

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<sup>9</sup> The equilibrium level of entrepreneurship is defined with regard to the deployment stage of each country.

focus on entrepreneurs defined quite narrowly as entrepreneurs with high growth potential.<sup>10</sup> They find that these entrepreneurs do have a positive effect on economic growth. Salgado-Banda (2007) uses two measures of entrepreneurship, self-employment and patents, to study the relationship to economic growth. Inspired by Baumol's (1990) theory on productive and unproductive entrepreneurship patents are used as a measure of productive entrepreneurship. Self-employment may, on the other hand, comprehend both productive as well as unproductive entrepreneurship. The empirical findings show a negative relationship between self-employment and economic growth while patents are found to be positively correlated with economic growth.

If we summarise the empirical findings presented above there are some doubts regarding whether entrepreneurship really creates economic growth especially if we base the conclusions on non-harmonised self-employment data. However, a majority of the studies show results that imply that stimulating entrepreneurship have positive effects on aggregate economic growth.

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<sup>10</sup> To be defined as an entrepreneur with high growth potential all of the following four criteria must be fulfilled: employment growth potential, have an effect on the market, a global customer base and use new technology.

**Table 3. Summary empirical studies on the relationship between entrepreneurship and aggregate economic growth**

<b>Author</b>	<b>Country coverage</b>	<b>and Time period</b>	<b>Measure of entrepreneurship</b>	<b>Summary of findings</b>
Blanchflower (2000)	23 OECD-countries	1966-1996	Self-employment	Negative relationship between self-employment and economic growth
van Stel et al. (2005)	36 countries	1999-2003	GEM	In relatively rich countries entrepreneurship has a positive effect on economic growth, while the relationship is negative in less developed countries.
Carree et.al. (2002)	23 OECD-countries	1976-1996	Self-employment	Positive and negative deviation from the equilibrium level of entrepreneurship has negative effects on economic growth.
Carree et.al. (2007)	23 OECD-countries	1972-2004	Self-employment	Negative deviation from the equilibrium level of entrepreneurship restrains economic growth.
Klapper et al. (2007)	84 countries	2003-2005 (average)	Self-employment (World Bank)	Positive relationship between entrepreneurship and growth.
Acs et al. (2004)	20 OECD countries	1981-2001	Self-employment	Positive relationship between entrepreneurship and growth
Reynolds et al. (2004)	40 countries	2000-2003	GEM	Positive relationship between entrepreneurship and growth but it takes some time before the effect appears.
Carree and Thurik (2008)	21 OECD-countries	1972-2002	Self-employment	Initially a positive relationship then a negative and finally a positive effect. The net effect is positive.
Wong et al. (2005)	37 countries	2002	GEM	The existence of entrepreneurs defined as high growth potential entrepreneurs is positive for economic growth.
Salgado-Banda (2007)	22 countries	1980-1995	Self-employment and	Negative relationship between self-employment and

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patents

GNP growth

Positive relationship between patents and growth.

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## *5. Conclusions and policy implications*

This paper has reviewed the empirical evidence on the relationship between entrepreneurship and economic growth in terms of productivity, employment growth and aggregate economic growth. Regarding the relationship between entrepreneurship and productivity it is definitely questionable whether the effect is positive in the short-run. However, in a long-term perspective the positive effects of entrepreneurship are much more pronounced. Also regarding the relationship between entrepreneurship and employment growth, some researchers present empirical evidence, which questions the positive effects. Some of the empirical findings clearly imply that employment effects may vary significantly across time and space. Hence, as emphasised by Sternberg and Rocha (2007) a policy focused on stimulation of entrepreneurship cannot be considered as a universal measure in order to tackle employment problems in all regions. However, in the long-term perspective most recent research indicate that the indirect employment effects of entrepreneurship can be expected to be beneficial for the economy. Hence, policy-makers need to be very patient since it may take 8-10 years before the effect appears. Finally, if we focus on the effects of entrepreneurship at the aggregate economy level, most studies that find a negative relationship between entrepreneurship and aggregate economic growth employ self-employment as a measure of entrepreneurship. Several researchers emphasise that this is due to that non-harmonised measures of self-employment are used. An additional reason for this result is that this measure might include productive as well as unproductive entrepreneurship. Furthermore, self-employment must be regarded as a static measure of entrepreneurship, which does not fully encompass the dynamic aspects usually assigned to entrepreneurship.

# References

- Acs, Z.J. and C. Armington (2004), Employment Growth and Entrepreneurial Activities in Cities, *Regional Studies*, 38, 911-927
- Acs, Z.J. D. B. Audretsch, P. Braunerhjelm and B. Carlsson (2004), The Knowledge Filter and Entrepreneurship in Endogenous Growth, Discussion paper on Entrepreneurship, growth and Public Policy Nr 0805, Max Planck Institute, Jena
- Aghion, P., R. Blundell, R. Griffith, P. Howitt and S. Prantl (2004), Entry and Productivity Growth: Evidence from Microlevel Panel Data, *Journal of the European Economic Association*, 2, 265-276
- Aghion, P., R. Blundell, R. Griffith, P. Howitt and S. Prantl (2006), The Effects of Entry on Incumbent Innovation and Productivity, NBER Working Paper 12027.
- Ahn, S. (2001), Firm Dynamics and Productivity Growth: A Review of Micro Evidence from OECD Countries OECD Economics department Working Paper NO. 297, OECD, Paris.
- Andersson, L-F. (2006), Företagsdynamik och tillväxt, En kartläggning och analys av företagsdynamik och arbetsproduktivitetstillväxt i Sverige. (Firm Dynamics and growth), ITPS report A2006:016, Swedish Institute for Growth Policy Studies, Östersund.
- Ashcroft, B. and J. Love, (1996), Firm Births and Employment Change in the British Counties: 1981-1989, *Papers in Regional Science*, 75, 483-500
- Audretsch D.B. and M. Fritsch (2002), Growth Regimes over Time and Space, *Regional Studies*, 36, 113-124
- Audretsch, D.B., M.C. Keilbach and E.E. Lehmann (2006), *Entrepreneurship and Economic Growth*, Oxford University Press, New York
- Baldwin, J.R. and W. Gu (2006), Competition, Firm Turnover and Productivity Growth, Research Paper Economic Analysis, Research Paper Series, Statistics Canada
- Baptista, R., V. Escária and P. Madruga (2005), Entrepreneurship Regional Development and Job Creation: the Case of Portugal, Discussion Paper No. 0605, Max Planck Institute for Research in Economic Systems, Jena
- Baumol, W. J. (1990), Entrepreneurship: Productive, Unproductive and Destructive, *Journal of Political Economy*, 98, 893-921

- Birch, D. (1979), *The Job Generation Process*, The MIT Press, Cambridge MA
- Blanchflower, D.G. (2000), Self-Employment in OECD Countries, *Labour Economics*, 7, 471-505
- Bosma, N. and H. Nieuwenhuijsen (2002), Turbulence and Productivity; An Analysis of 40 Dutch Regions in the period 1988-1996, SCALES-paper N200205, EIM Business and Policy Research, Zoetermeer
- Brandt, N. (2004), Business Dynamics, Regulation and Performance, OECD Science technology and Industry Working papers , 2004/3 OECD
- Braunerhjelm, P. and B. Borgman (2004), Geographical Concentration, Entrepreneurship and Regional Growth. Evidence from Regional Data in Sweden, 1975-99, *Regional Studies*, 38, 929-947
- Callejón M. and A. Segarra (1999), Business Dynamics and Efficiency in Regions: The Case of Spain, *Small Business Economics*, 13, 253-271
- Carree, M., A. van Stel, A.R. Thurik and S. Wennekers (2002), Economic Development and Business Ownership: An Analysis Using Data of 23 OECD Countries in the Period 1976-1996, *Small Business Economics*, 19, 271-290
- Carree, M., A. van Stel, A.R. Thurik and S. Wennekers (2007), The Relationship between Economic Development and Business Ownership Revisited, Discussion Paper No 2007-022/3, Tinbergen Institute
- Carree, M. and A.R. Thurik (2003), The Impact of Entrepreneurship on Economic Growth, in Acs, Z.J. and D.B Audretsch (ed), *Handbook of Entrepreneurship Research. An Interdisciplinary Survey and Introduction*, Kluwer Academic Publishers, Boston
- Carree, M. and A. R. Thurik (2008), The Lag Structure of the Impact of Business Ownership on Economic Growth in OECD Countries, *Small Business Economics*, 30, 1:101-110, January.
- Caves, R.E. (1998), Industrial Organization and New Findings on the Turnover and Mobility of Firms, *Journal of Economic Literature*, 36, 1947-1982
- Davidsson, P., L. Lindmark and C. Olofsson (1994), New Firm Formation and Regional Development in Sweden, *Regional Studies*, 28, 395-410

- Desai S. and Z. J. Acs (2007), A Theory of Destructive Entrepreneurship, Jena Economic Research Papers 2007-085
- Disney, R, J. Haskel and Y. Heden (2003), Restructuring and Productivity Growth in UK Manufacturing, *Economic Journal* 113, 666-694
- Foster, L., J.C. Haltiwanger and C. J. Krizan (2006), Market Selection, Reallocation, and Restructuring in the U. S Retail Trade Sector in the 1990s, *The Review of Economics and Statistics* 88, 748-758
- Fritsch, M. (1997), New Firms and Regional Employment Change, *Small Business Economics* 9, 437-448
- Fritsch, M. (2008), How Does Business Formation Affect Regional Development? Introduction to the Special Issue, *Small Business Economics*, 30, 1-14
- Fritsch, M. and P. Mueller (2004), Effects of Business Formation on Regional Development over Time, *Regional Studies*, 38, 961-975
- Fritsch, M. and P. Mueller (2008), The Effect of New Business Formation on Regional Development over Time: The Case of Germany, *Small Business Economics*, 30, 15-29
- Fölster, S. (2000), Do Entrepreneurs Create Jobs?, *Small Business Economics*, 14, 137-48
- Fölster, S. (2002), Do Lower Taxes Stimulate Self-Employment?, *Small Business Economics*, 19, 135-145.
- Geroski, P.A. (1995), What Do We Know About Entry?, *International Journal of Industrial Organization*, 13, 421-440
- Hakkala, K. (2006), Corporate Restructuring and Labor Productivity Growth, *Industrial and Corporate Change*, 15, 683-714
- Hedén, Y. (2005), Productivity, Upskilling, Restructuring, Entry and Exit: Evidence from the UK and Swedish Micro Data, University of London
- Henrekson, M. and M. Stenkula (2007), *Entreprenörskap*, (Entrepreneurship) SNS, Stockholm
- Holz-Eakin, D. and C. Kao (2003), Entrepreneurship and Economic Growth: The Proof is in the Productivity, Center for Policy Research, Working Paper No 50, Syracuse University



- Johansson, D. (2004), Is Small Beautiful? The Case of the Swedish IT Industry, *Entrepreneurship and Regional Development*, 16, 271-287
- Karlsson, C., C. Friis and T. Paulsson (2005), Relating Entrepreneurship to Economic Growth, in Johansson B., C. Karlsson and R.R. Stough (red.) *The Emerging Digital Economy: Entrepreneurship, Clusters and Policy*, Springer-Verlag, Berlin, 83-111
- Klapper, L, L. Laeven and R. Rajan (2006), Entry Regulation as a Barrier to Entrepreneurship, *Journal of Financial Economics*, 82, 591-629
- Klette, T. and A. Mathiasen (1996), Job Creation, Job Destruction and Plant Turnover in Norwegian Manufacturing, *Annales d'Economique et de Statistique*, 41/42, 97-125.
- Persson, H. (2004), The Survival and Growth of New Establishments in Sweden 1987-1995, *Small Business Economics*, 23, 423-440
- Reynolds, P.D., D.J. Storey and P. Westhead (1994), Cross-National Comparisons of the Variation in New Firm Formation, *Regional Studies*, 28, 443-456
- Reynolds, P.D., W.D. Bygrave and E. Autio (2004), *Global Entrepreneurship Monitor: 2003 Executive Report*, Babson College, Babson Park, MA
- Salgado-Banda, H. (2007), Entrepreneurship and Economic Growth: An Empirical Analysis, *Journal of Developmental Entrepreneurship* March, 2007
- Scarpetta, S., P. Hemmings, T. Tressel, and J. Woo (2002), The Role of Policy and Institutions for Productivity and Firm Dynamics Evidence from Micro and Industry Data, OECD Economics Department Working paper no. 329, OECD, Paris
- Sternberg R. and H. O. Rocha (2007), Why Entrepreneurship is a Regional Event, i Rice, M.P. and T.G. Habbershon, (2007) (Eds.) *Entrepreneurship. The Engine of Growth*, Volume 3, Praeger Publishers, Westport 215-237.
- van Praag, M.C. and P.H. Versloot (2007), What is the Value of Entrepreneurship? A Review of Recent Research, *Small Business Economics*, 29, 351-382,
- van Stel A. and D.J. Storey (2004), The Link between Firm Births an Job Creation: Is there a Upas Tree Effect?, *Regional Studies*, 38, 893-909
- van Stel A. J. (2005), "COMPENDIA: Harmonizing Business Ownership Data Across Countries and Over Time", *International Entrepreneurship and Management Journal*, 1, 1:105-123.
- van Stel A, M. Carree and R. Thurik (2005), The Effect of Entrepreneurial Activity on National Income Growth, *Small Business Economics*, 24, 311-321

- van Stel A. and B. Diephuis (2004), Business Dynamics and Employment Growth: A Cross-Country Analysis, in *Frontiers of Entrepreneurship Research 2004*, Babson College
- Wong P.K., Y.P. Ho and E. Autio (2005), Entrepreneurship, Innovation, and Economic Growth: Evidence from GEM Data, *Small Business Economics*, 24, 335-350
- Zacharakis, A. L. Bygrave W. D. and Shepherd, D. A. (2000), Global entrepreneurship monitor: National entrepreneurship assessment: United States of America. Kaufmann Center for Entrepreneurial Leadership, Kansas City