In Intrapreneurship We Trust
Institutions and the Allocation of Entrepreneurship

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Abstract

Entrepreneurship within established organizations is largely neglected in internationally comparative research on entrepreneurship. The focus on independent entrepreneurship and the creation of new organizations has ignored the option of entrepreneurial employee activity. In this paper, we argue that institutions affect the allocation of entrepreneurship across new and established organizations. We link institutional theory to the entrepreneurial theory of economic organization, to come up with institutional explanations of variations in the allocation of entrepreneurship. We test our hypotheses with Global Entrepreneurship Monitor (GEM) data on early-stage (independent) entrepreneurial activity and entrepreneurial employee behavior.

In developed economies the prevalence of entrepreneurial employee behavior is on average found to be in the same order of magnitude as that of independent entrepreneurial activity. At the same time prevalence rates of these two types of entrepreneurship vary substantially between countries. We analyze the allocation of entrepreneurial activity across early-stage independent entrepreneurial activity (entrepreneurship in new organizations) and entrepreneurial employee activity (entrepreneurship in established organizations) in 39 countries, taking into account effects of the level of economic development as well as the formal and informal institutional setting.

We initially find that labor market institutions and the level of generalized trust affect the allocation of entrepreneurship across new and established organizations as expected, however these effects vanish once a Nordic country variable is introduced.

Keywords: entrepreneurial employee activity, intrapreneurship, independent entrepreneurial activity, institutions

JEL-codes: J83, L26, M13, O43, O57

1. INTRODUCTION

International research has shown enormous variation in national rates of (independent) entrepreneurship (Blanchflower, 2000; Bowen & DeClercq 2008; Amorós & Bosma 2014; Autio and Fu 2014). Recent research has also provided increasing insight into the determinants of regional and national variations in self-employment and new firm formation (see e.g. Stam, Thurik and Van der Zwan 2010; Autio, Pathak, & Wennberg, 2013; Estrin, Korosteleva, & Mickiewicz, 2013; Fritsch and Storey 2014). This research presumes that entrepreneurship is a person-based activity reflected in the occupational status of individuals (self-employment) or in the activity of starting a new independent organization in a market setting. The latter activity is particularly relevant as it is often seen as an important driver of innovation.

This comparative research on entrepreneurship has provided evidence on the relationship between economic development, institutions, demography and agglomeration economies on the one hand, and self-employment levels and new firm formation rates on the other. However, the explained variance in entrepreneurship is rather low and several empirical puzzles remain. For example, how is it possible that several countries which perform quite well with respect to innovation (Sweden, Denmark) are lagging with respect to independent entrepreneurial activity, while some countries that perform only modestly (Australia, Ireland) or very badly (Portugal, Greece) with respect to innovation are among those leading the self-employment rankings?

One important empirical issue is usually overlooked in these comparative international analyses, to the detriment of our insight into varieties in entrepreneurship, and the role of institutions therein in particular. This issue is entrepreneurial behavior by employees in existing organizations, which until recently has been disregarded by international entrepreneurship research. This type of entrepreneurial behavior has however been studied extensively at the business level, labeled as intrapreneurship or corporate entrepreneurship. However, it might also be very relevant to study this type of entrepreneurial behavior at the country level, in order to understand the role of the macro environment in the choice for particular entrepreneurial action. The dominance of studies on innovative new business entry is often traced back to the prevailing interpretation of the Schumpeterian entrepreneur, i.e. the person who carries out new combinations (Schumpeter, 1934), as the founder of an innovative start-up. However, even Schumpeter (1934: 74-75) himself did not limit entrepreneurs to this role: '(...) in the first place we call entrepreneurs not only those "independent" businessmen in an exchange economy who are usually so designated, but all

who actually fulfill the function by which we define the concept, even if they are, as is becoming the rule, "dependent" employees of a company'. In this paper we will bring this neglected dimension of international entrepreneurship research on stage again.

This paper aims to disentangle the role of formal and informal institutions in the allocation of entrepreneurship across independent entrepreneurship and entrepreneurial employee activity. We are inspired by the thesis of Baumol (1990) that the allocation of entrepreneurship over societies is heavily influenced by country specific institutional settings. These institutional settings condition economic behavior in general (North, 1990) and entrepreneurial behavior in particular (Baumol, 1990). Entrepreneurship, defined as the recognition, evaluation and pursuit of entrepreneurial opportunities (Shane & Venkatamaran, 2000) or sensing and seizing opportunities (Augier and Teece 2009), is not limited to the context of the creation of independent new organizations, and should thus also take into account the context of established organizations. In this paper we build upon the entrepreneurial theory of the firm to formulate hypotheses on how interpersonal trust and the structure of the economy (knowledge workers, firm size distribution) affect the organizational choice for entrepreneurial action in society. Subsequently our empirical investigation, using a new and unique international dataset, shows that intrapreneurship is not at all a marginal type of entrepreneurship, and that its prevalence is significantly affected by societal levels interpersonal trust.

We start this paper with a theoretical framework on institutions and entrepreneurship, drawing on institutional theories and theories of the firm. More in particular, our framework is based on the perspective of 'derived judgement' (Foss et al. 2007). This perspective theorizes the benefits and costs of delegation of authority, based on the notion of 'completeness' of the employer-employee contract. By connecting this to institutional theory we formulate expectations with respect to the allocation of entrepreneurial behavior between new and existing organizations. Subsequently our empirical investigation, using a new and unique international dataset, shows that entrepreneurial employee activity in existing organizations is not at all a marginal type of entrepreneurship, and that its prevalence is indeed significantly affected by the institutional environment. In order to control for spurious correlation between institutions and types of entrepreneurship we provide robustness checks to also account for the effects of prosperity levels (GDP per capita) and geographic characteristics. We conclude by discussing our findings and by presenting several implications and future research directions.

2. CONCEPTUAL FRAMEWORK AND HYPOTHESES

Concepts and definitions

Entrepreneurial employee activity refers to activities by employees in organizations to undertake new business activities. Although entrepreneurial employee activity is related to corporate entrepreneurship and to intrapreneurship (see Sharma & Chrisman, 1999; Antoncic & Hisrich, 2003), these three concepts differ in the following sense. Corporate entrepreneurship is usually defined at the level of organizations and refers to a top-down process, i.e. a management strategy to foster initiatives and efforts to innovate and develop new business. Intrapreneurship relates to the individual employee level and is about bottom-up, proactive work-related initiatives of individual employees. Entrepreneurial employee activity as used in the present study is a somewhat wider concept at the level of individual employees which, by including activities initiated by the organizations' top levels as well as those emerging from the bottom levels and up, partly overlaps with both corporate entrepreneurship and intrapreneurship.

Entrepreneurial employee activity shares many key behavioral characteristics with the comprehensive concept of entrepreneurship, such as taking initiative, pursuit of opportunity and some element of 'newness'. At the same time, entrepreneurial employee activity also belongs to the domain of employee behavior and thus faces specific limitations that a corporate hierarchy and an intra-organizational context may impose on individual initiative, as well as specific means of support that an existing business may offer to an intrapreneur. By combining insights from two strands of literature on employee behavior inside existing organizations, i.e. proactiveness (Crant, 2000; Frese & Fay, 2001; Parker & Collins, 2010) and innovative work behavior (De Jong, 2007; Farr & Ford, 1990; Kanter, 1988) with insights from the literature on early-stage entrepreneurial activity (Gartner & Carter, 2003; Reynolds, 2007; Shane, 2003) and that on intrapreneurship and corporate entrepreneurship (Lumpkin & Dess, 1996; Pinchot, 1987; Sharma & Chrisman, 1999; Zahra, 1996) we derive a detailed list of relevant activities and behavioral aspects of entrepreneurial employee activity (see De Jong & Wennekers, 2008). Major activities related to entrepreneurial employee activity include opportunity perception, idea generation, designing a new product or another recombination of resources, internal coalition building, persuading management, resource acquisition, planning and organizing. Key behavioral aspects of intrapreneurship are personal initiative, active information search, out of the box thinking, voicing, championing, taking charge, finding solutions and some degree of risk taking (Crant, 2000; Kanter, 1988; Lumpkin, 2007; Parker & Collins, 2010; Pinchot, 1985).

Pinchot (1987) refers to intrapreneurs as 'dreamers who do'. Accordingly, it is possible to distinguish between two phases of entrepreneurial employee activity, which may be called 'vision and imagination' and 'preparation and emerging exploitation'. Analytically, this distinction formalizes the sequential nature of the various intrapreneurial activities (from opportunity recognition to evaluation and exploitation, cf. Shane & Venkatamaran, 2000). Empirically, it helps in assembling relevant items for measuring entrepreneurial employee activity. In practice, these stages may overlap and occur in cycles, as the perception of an opportunity sometimes follows various preparatory activities such as product design or networking (see Gartner & Carter, 2003).

As for the relevant scope of entrepreneurial behavior, the large conceptual diversity in the literature also reflects on any concept of entrepreneurial employee activity. A first and very general approach is 'pursuit of entrepreneurial opportunity' (Shane, 2003). A second view may be labelled 'new entry' which includes 'entering new or established markets with new or existing goods and services' (Lumpkin & Dess, 1996: 136). Finally, 'new organization creation' (Gartner, 1989) offers a third view of entrepreneurship as the process by which new organizations are created. Following this latter view entrepreneurial employee activity should always be linked to some sort of 'internal start-up' (such as establishing a joint venture, a new subsidiary, a new outlet or a new business unit).

Institutions and the allocation of entrepreneurial activity

In the legacy of Frank Knight (1921) entrepreneurs are seen as actors that take entrepreneurial judgments and execute these for their own risk and reward. This judgment is complementary to other assets, which need to be organized in order to pursue a particular entrepreneurial opportunity. This involves arranging other human and capital assets under the control of the owner of the firm. However, these owners, especially in large organizations, might delegate a wide range of (entrepreneurial) decisions to subordinates, that then initiate and implement entrepreneurial activities within the organization.

Entrepreneurship may manifest itself in different forms, including self-employment, entrepreneurial behavior by employees within existing organizations, and activities in the informal economy that are often unobservable. The allocation of entrepreneurship across these types of entrepreneurial activity will among others depend on the occupational choices of individuals and on the delegation of decision rights by employers to their employees.

These choices are partly dependent on the institutional conditions in which they are framed (Baumol 1990, Boettke and Coyne 2003). The macro and micro institutional settings

provide the conditions for a trade-off of individuals to either pursue entrepreneurial opportunities for their employer, or to strike out with their own business. In this paper, on the national allocation of entrepreneurship, we focus on the macro institutional setting, and more in particular on how this affects the costs and benefits of being a business owner or an entrepreneurial employee. This involves the monetary costs and benefits as well as non-monetary costs and benefits of both options. Examples of the latter are the benefits that employees derive from controlling aspects of their job situation (Osterloh and Frey 2000, Gagné and Deci 2005) and that entrepreneurial individuals derive from the autonomy they have in their occupational setting (Benz and Frey 2008, Lange 2012).

Incomplete contracts and the allocation of entrepreneurial activity

Trust is widely recognized as central to the establishment and growth of an effective economy (Knack and Keefer 1997; La Porta et al. 1997). Derived from this, trust is also seen as an essential element in stimulating (productive) entrepreneurship: countries full of mistrustful people are likely to be lagging with respect to (productive) entrepreneurship. High levels of interpersonal trust within a population are said to reduce the uncertainties associated with engaging in entrepreneurial business activities (Kim and Li 2014; Kim and Kang 2014). Research on trust and entrepreneurial activity has until now focused on independent entrepreneurship as the dependent variable. Guiso, Sapienza & Zingales (2006) argue that trustworthy people are more likely to become (independent) entrepreneur, because "When contracts are incomplete, many deals are made just by shaking hands, which means relying on trust. An entrepreneur who works in a much unstructured environment is more exposed to these types of deals. Hence, trustworthy individuals will have a comparative advantage in becoming entrepreneurs." Their empirical analysis (based on an individual level of generalized trust, implying that individuals that have high generalized trust are trustworthy themselves, see Glaeser, Laibson, Scheinkman & Soutter, 2000) confirm the positive relation between trust and self-employment. The causal mechanism they allude to, thus involves the advantage trustworthy individuals have in becoming entrepreneur in a setting in which incomplete contracts in product markets dominate.

Similar findings, based on the same dataset (US General Social Survey) but with differently constructed variables, are reported by Kwon et al. (2013). Kwon et al. (2013) found that individuals in US communities with high levels of social trust are more likely to be self-employed compared to individuals in communities with lower levels of social trust. They explain this by the enhanced access to resources for entrepreneurship in high-trust

communities. In addition, Kwon and Arenius (2010) found national levels of interpersonal trust to have a positive effect on individual level entrepreneurial opportunity recognition. However, they did not measure the degree to which this opportunity was also pursued with an independent business. In a recent review, Welter (2012) showed that trust not always influences (independent) entrepreneurship positively.

Market economies are not just about transactions between independent agents (entrepreneurs) on product markets, they are also characterized (and perhaps even dominated) by intra-organizational transactions and activities (Simon 1990). This means that we should also take into account the role of employment contracts in these organizations, and the degree of the incompleteness of these labor contracts. The degree to which an employment relation leaves discretion to the employee can be represented as a spectrum with at the one end of the spectrum the situation in which the employer instructs the employee about everything (no scope is left for derived judgment), and at the other end of the spectrum the employee has fully scope for exercising his or her derived judgment. Foss et al. (2007) qualify this as the degree to which the employment relation is less or more 'incomplete'. They suggest to operationalize 'the degree of incompleteness' in terms of time that the employee is allowed to use corporate resources (including their own work time) to conduct activities that are not directly prescribed by the employer-owner (Foss et al. 2007: 1900). Companies like 3M, Google, and Genentech are examples where this takes place to a relatively large degree: in this sense the 'degree of incompleteness' in contracts can be linked to our notion of 'entrepreneurial employee activity'.

Since our paper focuses on the macro level rather than the firm level we adapt the Foss et al. (2007) model by translating the 'degree of incompleteness' at the firm level to the observed degree of entrepreneurial employee activity on the macro (country) level. We use the Foss et al. (2007) model as a micro foundation for explaining entrepreneurship aggregated at the country level. More specifically we consider the share of entrepreneurial employee activity in the overall entrepreneurial activity (which also includes the independent entrepreneurial activity) in a country.

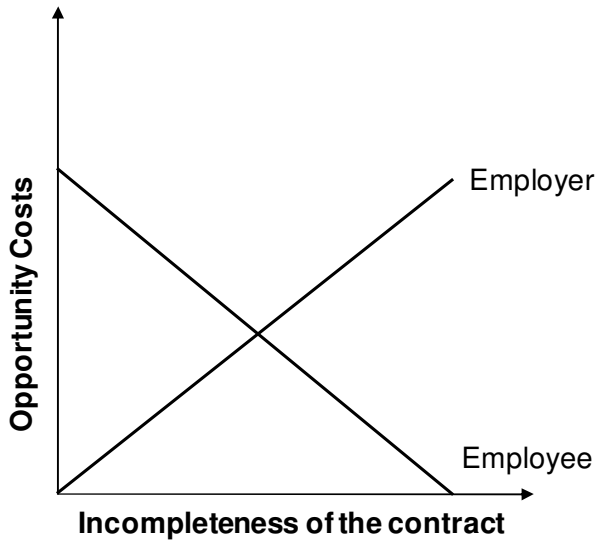
This share of entrepreneurial employee activity is then a function of the decreasing opportunity costs of employees and of the increasing opportunity costs of employers. The opportunity costs of employees are negatively related to the incompleteness of the labor contract: in the situation of a fully specified (complete) labor contract their opportunity costs would be very high, because they forego the opportunity to be fully autonomous as an independent entrepreneur, while in a situation of a fully open (incomplete) labor contract

their opportunity costs would be very low (or even zero), because they have the same level of autonomy in their daily working life. The reverse counts for the opportunity costs of employees: in the situation of a fully specified (complete) labor contract their opportunity costs would be very low, because they can fully steer the activities of their employees, and no effort will go wasted in unspecified activities, while in a situation of a fully open (incomplete) labor contract their opportunity costs would be very high, because they have no grip on the activities of their employees, which might then put all their efforts in non-productive activities.

Based on the model by Foss et al. (2007) we formulate hypotheses to predict the share of entrepreneurial employee activity in the overall employee activity in a country. The model has two axes, representing the two key mechanisms: incompleteness of the contract (x-axis) and the opportunity costs (y-axis), of the employer/owner and the employee separately. Figure 1 shows a simple abstraction of the initial situation.

FIGURE 1

Theoretical model - opportunity costs and incompleteness of contract



In order to use this micro model to explain the prevalence of intrapreneurship in society (macro), we make the assumption that the degree of incompleteness of labor contracts in organizations (micro) is reflected in the share of entrepreneurial employee activity in overall entrepreneurial activity in society (macro). We use the insights on the micro level governance

of entrepreneurial action for the explanation of the allocation of entrepreneurial activity over newly emerging independent businesses and established organizations at the macro level.

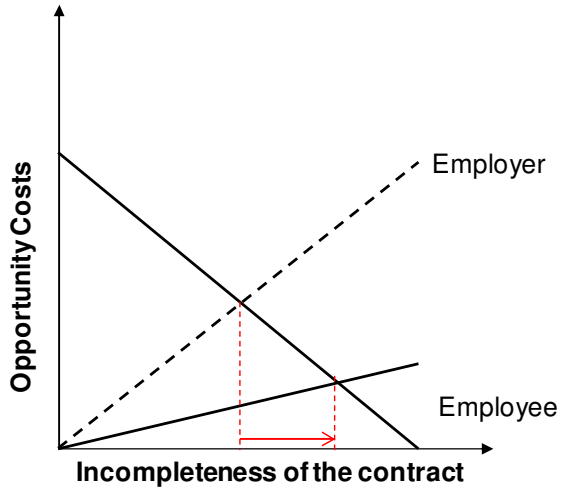
In the default situation in entrepreneurship studies is the situation in which an individual entrepreneur or an entrepreneurial team owns the corporation with which they pursue entrepreneurial opportunities. In this situation ownership and management are not separated, and the entrepreneurs work for their own risk and reward, a situation in which there is an optimal incentive alignment (Knight 1921, Jensen and Meckling 1976). When employees of this corporation pursue entrepreneurial opportunities this may produce problems with respect to the responsibility of the risks and rewards from this entrepreneurial action. Either the employee will take too many risks, for which the owner has to pay in the end, or the employee will be hesitant to pursue entrepreneurial opportunities, because she expects that most of the rewards will be creamed off by the employer; i.e. in both cases opportunism is expected to lead to suboptimal outcomes. This suboptimality of entrepreneurial employee activity is likely to be stronger in societal settings in which levels of generalized trust are relatively low. However, the separation of ownership and entrepreneurial action is less problematic in a societal setting in which social obligations and reciprocity dominate, i.e. with high levels of generalized trust. This generalized trust provides strong restraints on agent opportunism (see Cuevas-Rodríguez et al. 2012), and thus makes the bundling of ownership and entrepreneurial action less necessary.

Consequently we hypothesize that ownership and entrepreneurial action is more likely to be separated in countries with high levels of generalized trust. We also infer that in societies with high levels of interpersonal trust employers have less need to specify complete contracts. Hence, we formulate the following hypothesis.

Hypothesis 1. The share of entrepreneurial employee activity is positively associated with the level of generalized trust in society.

FIGURE 2

Theoretical model – effects of increasing the levels of generalized trust



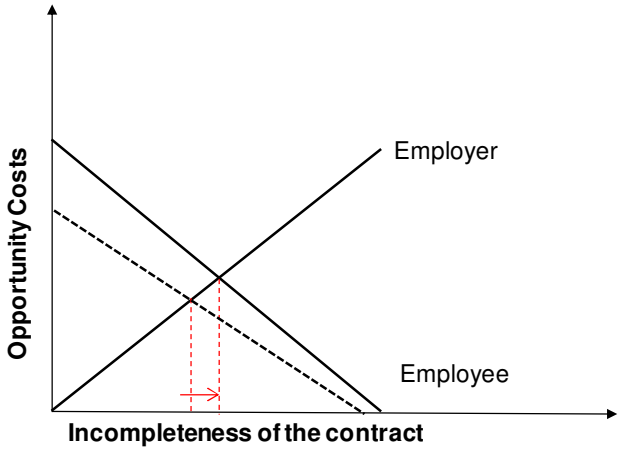
Labor market institutions may also influence the choice between entrepreneurial employee activity and independent entrepreneurship. In particular, a social security system that favors wage-employment over self-employment (i.e. by providing social security entitlements mainly for employees) will add to the employee's opportunity cost of independent entrepreneurship (cf. Amit, Muller, & Cockburn, 1995). Thus, enterprising individuals with safe jobs in existing firms will think twice before moving to a risky high potential new independent business venture (see Bosma, Schutjens, & Stam, 2009; Autio 2011). Instead, they may be expected to opt for engaging in entrepreneurial employee activity. In Figure 3, this is indicated by a shift from the dotted employee's opportunity cost curve to the solid curve, resulting in a higher incompleteness of the contract and hence under the abovementioned assumption) in more entrepreneurial employee activity. We expect this effect to override a potentially negative effect caused by (potential) employers who decide to hire fewer, or even no employees as a result of higher employment protection[1]. Thus, the second hypothesis reads as follows

[1] In some contexts, employers may also perceive higher opportunity costs as the pool of employees would become characterized more by entrepreneurial employees, shifting the employers' opportunity cost curve upwards (in case entrepreneurial employees do not align with the employer's interests) and hence putting effort in creating more complete contracts..

Hypothesis 2. The extent to which social security favors employees in comparison to self-employed is positively associated with the share of entrepreneurial employee activity

FIGURE 3

Theoretical model – effects of increasing the level of employment protection



3. DATA AND METHOD

The data for the present investigation were collected through a special theme study in the framework of the Global Entrepreneurship Monitor (GEM) that annually surveys a minimum number of 2,000 adults in each participating country as to their attitudes towards entrepreneurship, their participation in entrepreneurial activity and their entrepreneurial aspirations (see Reynolds, Bosma, Autio, Hunt, De Bono, Servais, Lopez-Garcia, & Chin, 2005 for a detailed description of the GEM methodology). In 2011, 52 countries participated in this study on entrepreneurial employee activity using a set of specific questions targeted at all employees – excluding those already identified as owner-managers of businesses - aged between 18-64 years in the GEM samples (Bosma, Wennekers and Amorós, 2012; Bosma, Stam & Wennekers, 2012). This cumulates into a total of over 140,000 respondents, of which more than 70,000 are employees, of the GEM Adult Population Survey. A particular advantage of this methodology is the opportunity to compare entrepreneurial employee activity with 'regular' entrepreneurial activity (i.e. individuals who own and manage a business, or expect to own the business they are setting up) at both the macro and the micro level. The measures obtained from the GEM 2011 study that will also be used in the empirical part of the present study are described in Table 1. At the national level the so-called

Total early-stage Entrepreneurial Activity (TEA) rate measures the aggregate prevalence of nascent entrepreneurs and owner-managers of new businesses as a percentage of the adult population (18-64 years of age). For terminological consistency with our conceptual framework, we will denote this rate in the present paper, however, as Independent early-stage Entrepreneurial Activity (IEA).

TABLE 1
Definitions of GEM measures of involvement in independent entrepreneurial activity

Measure	Description
Nascent entrepreneur	Individual who is currently actively involved in setting up a business he/she will own or co-own; this business has not paid salaries, wages, or any other payments to the owners for more than three months
Owner-manager of new business	Individual who currently, alone or with others, owns and manages an operating business that has paid salaries, wages or other payments to the owners for more than three months, but not more than 42 months.
Owner-manager of established business	Individual who currently, alone or with others, owns and manages an operating business that has paid salaries, wages or other payments to the owners for more than 42 months.

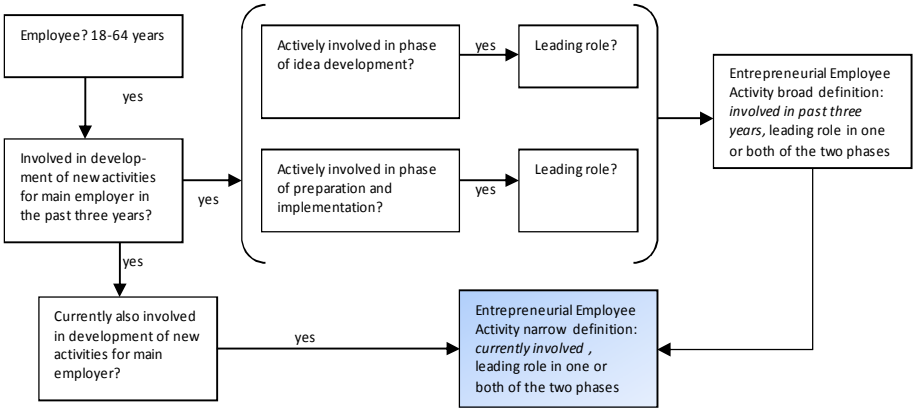
Note: measures at the macro-level represent prevalence rates in percentages of the 18-64 population

Regarding the scope of entrepreneurial employee activity, GEM operationalized entrepreneurial employee activity as employees developing new business activities for their employer, including establishing a new outlet or subsidiary and launching new products or product-market combinations. This approach is closest to the 'new entry view' discussed previously, and is in many ways comparable to the measure of independent early-stage entrepreneurial activity, albeit within the context of established organizations. It is however definitely wider than new organization creation. On the other hand, it excludes employee initiatives that aim mainly to optimize internal work processes. These latter activities belong to the domain of 'innovative work behavior' (De Jong, 2007): entrepreneurial employee activity and innovative work behavior overlap, but are not identical. Next, two phases are distinguished in the intrapreneurial process: idea development for new business activities and preparation and (emerging) exploitation of these new activities. For the role of entrepreneurial employees in each of these phases we distinguish between leading and supporting roles.

Based on these elements GEM distinguishes between employees who, in the past three years, have been actively involved in and have had a leading role in at least one of these

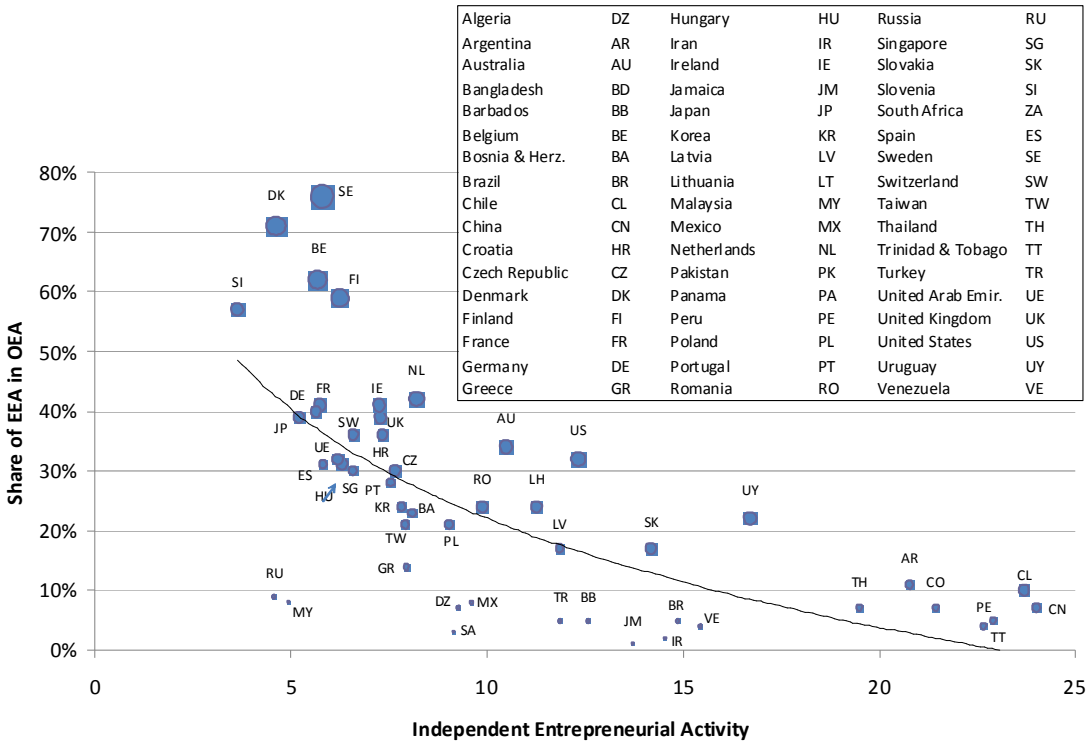
phases and who are in addition also currently involved in entrepreneurial employee activity. See the scheme in Figure 4 for a clarification.

FIGURE 4
Definition of entrepreneurial employee activity used in this study



Using the framework in Figure 4 all employees participating in the GEM Adult Population Survey could be classified in terms of their involvement in entrepreneurial employee activity. Accordingly the EEA rate measures the prevalence (in the population of 18-64 years) of employees who, in the past three years, have been actively involved in the development of new activities for their main employer, had a leading role in at least one phase of the 'intrapreneurial process' and are also currently involved in the development of such new activities.

FIGURE 5
Entrepreneurial employee activity (EEA) as a percentage of overall entrepreneurial activity (OEA), by the level of Independent Entrepreneurial Activity



Source: GEM 2011, 52 economies
Note: Size of bubbles indicate level of Entrepreneurial Employee Activity (EEA)

In order to test our hypotheses, we computed the Overall early-stage Entrepreneurial Activity (OEA) by adding up Independent early-stage Entrepreneurial Activity (IEA) and Entrepreneurial Employee Activity (EEA), and operationalized the *allocation* of entrepreneurial activity between IEA and EEA by taking the share of EEA in OEA. Figure 5 shows the share of EEA in overall entrepreneurial activity plotted against the level of IEA. In general, the EEA share declines with IEA and increases with EEA, which follows directly from our operationalization of the allocation of entrepreneurial activity. However, several economies with a low level of IEA nonetheless either exhibit relatively low shares of EEA (notably Malaysia and Russia) or show an exceedingly high share of EEA (notably Belgium, Denmark, Finland and Sweden.)

Independent variables

Due to a limited data availability of various independent variables we are restricted in our regression analyses to use data for 39 of the 52 participating countries in the GEM 2011 survey on entrepreneurial employee activities. The non-selected countries have less employment in large organizations and a lower GDP per capita, on average.

For testing our hypotheses regarding the allocation of OEA between EEA and IEA (measured by the share of EEA in OEA), we require measures related to the share of employees in large organizations, the level of interpersonal trust, the prevalence of discovery-driven activities, and the nature and balance of social security. Since there is no public dataset that includes the firm size distribution for the varied set of countries studied in this paper, we used the data of the GEM survey in which employees were asked about the size of their employer organization. We computed an indicator that reflects the percentage of employees working in organizations larger than 250 employees. The percentage of employees working in large organizations is highest in Sweden, the Netherlands, Germany, United States, Singapore, Belgium and the United Kingdom (all above 40%), and lowest in Malaysia, Pakistan, Iran and Thailand (all under 10%). We used United Nations data to construct a variable that reflects the percentage of the adult population that has successfully completed tertiary education (ISCED level 3).

The institutional variables used are based on different sources. We used the (nationally aggregated responses to) statements in the GEM National Expert Survey on labor market institutions, and more specifically the statement "Entrepreneurs have much less access to social security than employees". Sweden, Finland and the Netherlands have the highest scores on this indicator, while Poland, Greece and Turkey have the lowest scores.

The trust variable is derived from the World Value Survey database, and averages total individual responses to the statement that most people can be trusted [1] or that one can't be too careful [0] on the national level. Highest levels of generalized trust (i.e. relatively many responses have the value 1 instead of 0) are observed in Norway, Denmark, and Sweden (all above 0.65), countries with low levels of trust include Trinidad & Tobago, Malaysia, and Brazil (all below 0.10).

We also expect that the pre-existing corporate structure of an economy affects the current governance of entrepreneurial activity. An economy in which large firms prevail, is likely to lure many more entrepreneurial individuals into employment, as large firms pay more stable and higher wages than small firms (Parker 2009; Brown and Medoff 1989). This mechanism will be controlled for with an additional independent variable. Since there is no public dataset that includes the firm size distribution for the varied set of countries studied in

this paper, we used the data of the GEM survey in which employees were asked about the size of their employer organization. We computed an indicator that reflects the percentage of employees working in organizations larger than 250 employees. The percentage of employees working in large organizations is highest in Sweden, the Netherlands, Germany, United States, Singapore, Belgium and the United Kingdom (all above 40%), and lowest in Malaysia, Pakistan, Iran, Barbados and Thailand (all under 10%).

In order to control for additional effects that are covered by the level of economic development, we also add "level of economic development" as a covariate in additional regression analyses (see Bosma et al. 2014). GDP per capita (in USD, Purchasing Power Parities) was taken from the IMD Economic Outlook 2011.

4. RESULTS

Descriptive analyses

Summary statistics and correlations between the variables are provided in Table 2, for those 39 economies included in the regression[2]. All independent variables reveal strong and statistically significant correlations with the dependent variable, while most independent variables also reflect interdependencies. However, the variance inflation factor (vif) scores calculated with the regressions were all well below 10 and hence we did not find evidence for potential concerns as regards multicollinearity.

TABLE 2
Descriptives

				Correlations				
	Variable	mean	st. dev.	1	2	3	4	5
1	EEA_share	0.23	0.18					
2	Share labor force in large firms	0.25	0.13	0.65 **				
3	Interpersonal trust	0.27	0.16	0.53 **	0.22			
4	Knowledge workers	31	11	0.73 **	0.63 **	0.35*		
5	Social security favoring employees	0.68	0.10	0.45 **	0.10	0.44**	0.23	
6	GDP per Capita (ln)	9.54	0.67	0.77 **	0.68 **	0.38*	0.76 **	0.22

*p<.05, ** p<.01 (N=39)

[2] These include Algeria, Argentina, Australia, Brazil, Chile, Colombia, Croatia, Czech Republic, Finland, France, Germany, Greece, Hungary, Iran, Ireland, Korea, Latvia, Lithuania, Malaysia, Mexico, Netherlands, Pakistan, Peru, Poland, Portugal, Russia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Trinidad & Tobago, Turkey, United Kingdom, Uruguay and Venezuela.

EEA appears to be negatively correlated with IEA at the national level, both for the set of 52 countries (coefficient equals -0.37, p=0.006) and for the 36 countries appearing in the models explaining the allocation of entrepreneurial activity (-0.31, p=0.063). This lends support to the other important assumption underlying Figure 1, namely that in general the key causal factors have opposite effects on EEA and IEA.

Regression analyses

Table 3 shows the outcomes of the regression analyses explaining the share of EEA in overall participation in entrepreneurial activity (OEA) for 39 countries. The results of Model 1 confirm the positive relationship between firm size structure and the share of EEA. The next models add our independent variables of interest, reflecting trust in society, discovery-driven activities (reflected by the share of knowledge workers) and our measure dealing with employment protection. The results in Model 2 provide support for a 'trust' effect on the EEA share of overall entrepreneurial activity. Thus, we find support for hypothesis 1. Adding a proxy for the degree of discovery-driven activities in society, it is seen that also hypothesis 2 is confirmed: more discovery-driven activities go together with a high degree of employers working with relatively 'incomplete' contracts and hence a higher the share of entrepreneurial employee activity. It should be noted that in this model the link with employment in large organizations becomes less pronounced. Finally, adding the social security measure in Model 4 reveals that, as expected, those societies in which the difference in social security entitlements (between employees and self-employed) is large, see relatively more entrepreneurial employees.

TABLE 3
Regression results for share of entrepreneurial employee activity in overall entrepreneurial activity

	Model 1	Model 2	Model 3	Model 4
Share labor force in large firms	0.936 (5.95)***	0.806 (5.03)***	0.446 (2.97)***	0.471 (3.12)***
Interpersonal trust		0.460 (2.88)***	0.354 (2.49)**	0.247 (1.83)*
Knowledge workers			0.007 (3.64)***	0.007 (3.61)***
Social security favoring employees				0.401 (2.15)**
Constant	-0.006 (0.17)	-0.095 (2.09)**	-0.203 (4.40)***	-0.439 (3.45)***
R^2	0.42	0.58	0.68	0.73
N	39	39	39	39

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

Robustness checks

Given our limited sample size, it is of importance to check the robustness of our results. We conducted several robustness checks. First, we excluded China and Iran from our analysis, given the outlier position on the measurement of generalized trust. These outcomes are under debate. Since China was already excluded from the analysis due to missing observations, this results in a regression in which the number of observations is reduced from 39 to 38. Comparing to model 4 in Table 3, the overall effects are somewhat stronger. Second, we included GDP per Capita in our analysis. Model 4b shows that this particularly affects the estimates for the share of the labor force in large firms and for the degree of knowledge workers. Our analysis does not allow to address causality issues related to these three indicators. Third, we checked to what extent our results were driven by characteristics of a particular region. Figure 3 indicates that Nordic countries cluster by having high EEA rates. By including a dummy for the four Nordic economies in our sample we can check whether the effects in Table 3 can really be attributed to the hypothesized mechanisms or whether we should keep the option open that it is really a 'Nordic' effect. The results of these robustness checks in models 4c and 4d indicate that we cannot rule out such a geographical effect, even though there are solid indications that institutional effects may seriously affect

the allocation of entrepreneurial activities in Nordic countries (see e.g. Braunerhjelm and Henrekson 2013).

TABLE 4
Regression results for share of entrepreneurial employee activity in overall entrepreneurial activity: alternative specifications

	Model 4a	Model 4b	Model 4b	Model 4c
Share labor force large firms	0.403 (2.80)***	0.405 (3.13)***	0.225 (1.49)	0.223 (1.68)
Interpersonal trust	0.351 (2.42)**	0.208 (1.65)	0.322 (2.20)**	0.174 (1.41)
Knowledge workers	0.006 (3.33)***	0.006 (3.42)***	0.003 (1.71)*	0.003 (1.77)*
Social security favoring employees	0.408 (2.21)**	0.261 (1.34)	0.399 (2.11)**	0.249 (1.30)
Nordics		0.203 (3.54)***		0.208 (3.41)***
GDP per Capita (ln)			0.093 (3.09)***	0.095 (3.09)***
Constant	-0.425 (3.46)***	-0.306 (2.41)**	-1.155 (4.18)***	-1.050 (3.65)***
R^2	0.73	0.77	0.78	0.81
N	38	38	38	38

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

Note: excludes Iran

5. DISCUSSION

This investigation has provided a more complete view on entrepreneurial activity than previous international investigations on entrepreneurship by including entrepreneurial opportunity pursuit by individuals in both new and existing organization. The latter type of entrepreneurship - entrepreneurial employee activity - involves ‘employees developing new activities for their main employer’, while the first type refers to people who are engaged in setting up an independent business which they will own or co-own, or who are active as owner-managers of new businesses. This paper makes a distinct contribution to the literature by analyzing the data from a new and unique international comparative dataset including prevalence rates of entrepreneurial employee activity as well as early-stage independent

entrepreneurship across countries. Utilizing this data on entrepreneurial activity around the globe and combining this with relevant data from other sources the paper gives first indications of various national entrepreneurial framework conditions underlying the *allocation* of overall entrepreneurship across new and established organizations.

A first conclusion is that entrepreneurial employee activity and independent entrepreneurial activity are negatively related, suggesting that these modes of entrepreneurial activity are to some extent substitutes at the national level. As a second conclusion, our results suggest that the share of entrepreneurial employee activity depends on the institutional setting. We found positive effects of societies characterized by high levels of generalized trust, high shares of knowledge workers (which can be linked to priorities set in support for education) and the degree to which employees are perceived to benefit from social security, relative to self-employed. Hence, the allocation of entrepreneurship seems to be affected by formal and informal institutions. However, given the limited sample size we should be cautious; alternative interpretations are yet to be falsified, as our robustness checks indicate so far.

Implications and limitations

If it is indeed the case that, given a certain 'supply of entrepreneurial behavior', it depends on various contextual determinants whether entrepreneurial individuals pursue their aspirations within an established organization or choose to start up for themselves, the implications might be far-reaching. A particularly important implication for policymakers and academics emerging from our analysis is the observation that entrepreneurial employee activity is not a marginal phenomenon, and that it is also often affected in a completely different way by national conditions than independent entrepreneurship. Hence, policies on entrepreneurship may be incomplete if the size, the impact and the idiosyncrasies of entrepreneurial employees are disregarded.

Our research has limitations that are inherent to the unprecedented cross-national empirical approach adopted in our paper. These limitations may be dealt with in future research. First, due to the cross-sectional nature of the data we cannot rule out issues of reversed causalities. Therefore, we need future measurements of the construct to be able to get a grip on causal mechanisms. Second, our research approach lacks explicit attention to individual level and organizational level conditions of entrepreneurial employee activity. Multilevel designs with relevant information at these micro-levels will be needed to disentangle national effects. Finally, we also have not yet made a distinction between less and

more ambitious, and less and more innovative types of EEA and IEA. This other type of allocation of entrepreneurship (see e.g. Bowen & DeClercq, 2008; Stephan & Uhlaner, 2010) may be another interesting area of research, as recent data suggest that job growth expectations by entrepreneurial employees for their ventures by far exceed those of independent early-stage entrepreneurs (Bosma, Stam, & Wennekers, 2012).

REFERENCES

Amit, R. Muller, E., & Cockburn, I. 1995. Opportunity costs and entrepreneurial activity. *Journal of Business Venturing,* 10: 95-106

Amorós and Bosma (2014). GEM 2013 Global Report. www.gemconsortium.org

Antoncic, B. & Hisrich, R.D. 2001. Intrapreneurship: construct refinement and cross-cultural validation. *Journal of Business Venturing,* 16: 495–527.

Antoncic, B. & Hisrich, R.D. 2003. Clarifying the intrapreneurship concept. *Journal of Small Business and Enterprise Development,* 10 (1): 7-24.

Autio, E. and Fu K, (2014), Economic and political institutions and entry into formal and informal entrepreneurship, *Asia Pacific Journal of Management*, forthcoming.

Baumol, W.J. 1990. Entrepreneurship: productive, unproductive, and destructive. *Journal of Political Economy,* 98 (5): 893-921.

Blanchflower, D.G. 2000. Self-employment in OECD countries. *Labour Economics,* 7: 471-505.

Boettke, P. & Coyne C. 2003. Entrepreneurship and Development: Cause or Consequence? *Advances in Austrian Economics,* 6: 67-88.

Bosma, N., Schutjens, V. & Stam, E. 2009, Entrepreneurship in European Regions: Implications for Public Policy. In: Leitao, J. & Baptista, R. (eds) *Public Policies for Fostering Entrepreneurship: A European Perspective*. New York: Springer. pp. 59-89.

Bosma, N., Stam, E. & Wennekers, S. 2011. Intrapreneurship versus independent entrepreneurship: A cross-national analysis of individual entrepreneurial behavior. Tjalling Koopmans Institute working paper 11-04. Utrecht: Utrecht University School of Economics

Bosma, N., Stam, E. & Wennekers, S. 2012. Entrepreneurial Employee Activity: A Large Scale International Study. Tjalling Koopmans Institute working paper 12-12. Utrecht: Utrecht University School of Economics

Bosma, N.S., Stam, E. & Wennekers, S. (2014) Intrapreneurship versus entrepreneurship in high and low income countries. In Blackburn, R., Delmar, F., Fayolle, A. & Welter, F. (eds) *Entrepreneurship, People And Organisations. Frontiers in European Entrepreneurship Research*. Cheltenham: Edward Elgar. pp.94-115.

Bosma, N., Wennekers, S. & Amorós, J.E. 2012, *Global Entrepreneurship Monitor 2011 Extended Report; Entrepreneurs and Entrepreneurial Employees Across the Globe*, Global Entrepreneurship Research Association.

Bowen, H.P. & De Clercq, D. 2008. Institutional context and the allocation of entrepreneurial effort. *Journal of International Business Studies*, 39: 747-767.

Braunerhjelm, P. & Henrekson, M. 2013. Entrepreneurship, institutions, and economic dynamism: lessons from a comparison of the United States and Sweden. *Industrial and Corporate Change*, 22:1, 107-130.

Brown, C. & Medoff, J. L. 1989. The employer size-wage effect. *Journal of Political Economy*, 97: 1029–1057.

Caliendo, M., Fossen, F.& Kritikos, A. 2011. Personality characteristics and the decision to become and stay self-employed, IZA Discussion Paper No. 5566.

Carree, M. A., Van Stel, A. J., Thurik, A. R., & Wennekers, A. R. M. 2007. The relationship between economic development and business ownership revisited. *Entrepreneurship and Regional Development*, 19: 281–291.

Choi, Y.R. & Phan, P. H. 2006. The influences of economic and technology policy on the dynamics of new firm formation. *Small Business Economics*, 26: 493-503.

Crant, J.M. 2000. Proactive behaviour in organizations. *Journal of Management,* 26 (3): 435-462.

De Jong, J. 2007. *Individual innovation: The connection between leadership and employees' innovative work behavior*. PhD Thesis, Zoetermeer: EIM.

De Jong, J. & Wennekers, S. 2008. Intrapreneurship; conceptualizing entrepreneurial employee behavior. Research Report H200802, Zoetermeer: EIM.

Farr, J. & Ford, C. 1990. Individual innovation. In: M.A. West & J.L. Farr (eds.), *Innovation and creativity at Work: Psychological and Organizational Strategies*. Chichester: John Wiley, 63-80.

Foss, K., Foss, N.J. & Klein, P.G. (2007) Original and Derived Judgment: an Entrepreneurial Theory of Economic Organization, *Organization Studies* 28: 1893-1912

Frese, M., Kring, W. & Soose, A. 1996. Personal initiative at work: Differences between East and West Germany. *Academy of Management Journal,* 39(1): 37-63.

Frese, M. & Fay, D. 2001. Personal Initiative: An active performance concept for work in the 21st century. *Research in Organizational Behaviour,* 23: 133-187.

Fritsch, M. & Storey, D.J. (2014) Entrepreneurship in a Regional Context: Historical Roots, Recent Developments and Future Challenges, *Regional Studies*, 48:6, 939-954

Gartner, W.B. 1989. Who is an entrepreneur? Is the wrong question. *Entrepreneurship Theory and Practice,* 13: 47-68.

Gartner, W.B. & Carter, N.M. 2003. Entrepreneurial behaviour and firm organizing processes, in: D.B. Audretsch and Z.J. Acs (eds.), *Handbook of Entrepreneurship Research*, Boston/Dordrecht: Kluwer Academic Publishers, 195-221.

Ghoshal, S., Hahn, M. & Moran, P. 1999. Management competence, firm growth and economic progress. *Contributions to Political Economy,* 18: 121-150.

Grilo, I. & Thurik, A. R. 2008, Determinants of entrepreneurial engagement levels in Europe and the US. *Industrial and Corporate Change,* 17 (6): 1113–1145.

Hofstede, G. 2001. *Culture's Consequences; Comparing Values, Behaviors, Institutions and Organizations Across Nations*, Second edition. Thousand Oaks: Sage.

Inglehart, R. & Norris, P. 2003. *Rising Tide, Gender Equality and Cultural Change around the World.* Cambridge: Cambridge University Press.

ILO 2012. *Global Employment Trends 2012. Preventing a deeper jobs crisis*. Geneva: International Labour Office.

Kanter, R.M. 1988. When a thousand flowers bloom: structural, collective, and social conditions for innovation in organization. *Research in Organizational Behaviour,* 10: 169-211.

Kelley, D.J., Singer, S. & Herrington, M. 2012. *GEM 2011 Global Report*. http://www.gemconsortium.org/docs/2409/gem-2011-global-report

Kim, B.-Y. and Kang, Y. (2014) Social capital and entrepreneurial activity: A pseudo-panel approach. Journal of Economic Behavior & Organization 97: 47-60.

Kim, P.H. and Li, M. (2014) Seeking assurances when taking action: Legal systems, social trust, and starting businesses in emerging economies. Organization Studies 35(3): 359-391

Knack, S., Keefer, P. (1997). Does Social Capital Have an Economic Payoff? A Cross-Country Investigation. *Quarterly Journal of Economics* 112 (4): 1251-1288.

Koellinger, Ph.D. 2008. Why are some entrepreneurs more innovative than others? *Small Business Economics,* 31: 21-37.

Kuratko, D.F. 2007. Corporate entrepreneurship, *Foundations and Trends in Entrepreneurship* 3 (2): 151-203.

Kwon, S., & Arenius, P. (2010) Nations of entrepreneurs: A social capital perspective. *Journal of Business Venturing*, 25(3) 315-330.

Kwon, S.W., Heflin, C. and Ruef, M. (2013) Community Social Capital and Entrepreneurship. *American Sociological Review* 78(6): 980-1008.

La Porta, R., Lopez de Silanes, F., Shleifer, A. & Vishny, R.W. (1997) Trust in Large Organizations, *American Economic Review*, 187, 2, 333-8.

Lucas, R.E. 1978. On the size distribution of business firms. *Bell Journal of Economics,* 9: 508-523.

Lumpkin, G.T. & Dess, G.G. 1996. Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review,* 21 (1): 135-172.

Lumpkin, G.T. 2007. Intrapreneurship and innovation, in: J.R. Baum, M. Frese and R. Baron (eds), *The Psychology of Entrepreneurship*, Mahwah, New Jersey: Lawrence Erlbaum Associates, 237-264.

Morrison, E.W. & Phelps, C.C. 1999. Taking charge at work: Extra-role efforts to initiate workplace change. *Academy of Management Journal,* 42 (4): 403-419.

North, D. C. 1990. *Institutions, institutional change and economic performance*. Cambridge, England: Cambridge University Press.

OECD 2009. *Is Informal Normal? Towards More and Better Jobs in Developing Countries*. Paris: OECD.

Parker, S.C. 2009. Why do small firms produce the entrepreneurs? *Journal of Socio-Economics,* 38 (3), 484-494.

Parker, S.K. & Collins C.G. 2010. Taking Stock: Integrating and Differentiating Multiple Proactive Behaviors. *Journal of Management,* 36 (3): 633-662.

Pinchot, G. 1985. *Intrapreneuring: why you don't have to leave the corporation to become an entrepreneur*. New York: Harper and Row.

Pinchot, G. 1987. Innovation through intrapreneuring. *Research Management*, 13 (2): 14-19.

Reynolds, P.D. 2007. New firm creation in the United States; a PSED I overview, *Foundations and Trends in Entrepreneurship,* 3 (1): 1-150.

Reynolds, P.D., Bosma, N.S., Autio, E.S., Hunt, N., De Bono, I., Servais, Lopez-Garcia, P. & Chin, N. 2005. Global Entrepreneurship Monitor: data collection design and implementation 1998-2003. *Small Business Economics*, 24 (3): 205-231.

Schumpeter, J.A. 1934. *The Theory of Economic Development*. Harvard University Press: Cambridge MA.

Shane, S. 2003. *A General Theory of Entrepreneurship; The Individual-Opportunity Nexus*. Cheltenham: Edward Elgar.

Shane, S. & Venkataraman, S. 2000. The promise of entrepreneurship as a field of research. *Academy of Management Review,* 25: 217-226.

Shapero, A. & Sokol, L. 1982. The social dimensions of entrepreneurship. In: C.A. Kent, D.L. Sexton and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, 72-90, Englewood Cliffs, NJ: Prentice-Hall.

Sharma, P. & Chrisman, J.J. 1999. Toward a reconciliation of the definitional issues in the field of corporate entrepreneurship. *Entrepreneurship Theory and Practice,* 23 (3): 11-27.

Stam, E., Thurik, A.R. & Van der Zwan P. 2010. Entrepreneurial exit in real and imagined markets. *Industrial and Corporate Change,* 19 (4): 1109-1139.

Stephan, U. & Uhlaner, L.M. 2010. Performance-based vs socially supportive culture: A cross-national study of descriptive norms and entrepreneurship. *Journal of International Business Studies,* 41: 1347–1364.

Van der Sluis, J., Van Praag, M. & Vijverberg, W.P.M. 2005. Entrepreneurship Selection and Performance: A Meta-Analysis of the Impact of Education in Developing Economies. *The World Bank Economic Review*, 19 (2): 225-261.

Welter F. (2012) All you need is trust? A critical review of the trust and entrepreneurship literature. *International Small Business Journal* 30: 193-212.

Wennekers, S., Van Stel, A., Thurik, R. & Reynolds, P. 2005. Nascent entrepreneurship and the level of economic development. *Small Business Economics,* 24 (3): 293-309.

Zahra, S.A. 1996. Governance, ownership, and corporate entrepreneurship: The moderating impact of industry technological opportunities. *Academy of Management Journal,* 39(6): 1713-1735.