



Determinants of growth-oriented entrepreneurship; a multilevel approach

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Introduction

- Recent Entrepreneurship → Growth literature assumes specific *types* of entrepreneurship
- Pervasive differences in entrepreneurial activity on *sub-national* level (e.g. *Regional Studies* Special Issue 1994), Parker 2005; Tamásy 2006; Bergmann & Sternberg 2007)
- Still, entrepreneurship is an event performed by individuals
- This paper: first attempt to explain *individual* entrepreneurial behaviour also by *regional* (and national) characteristics
 - Objective: explain individual growth-oriented entrepreneurship instead of (*regional*) rates of growth-oriented entrepreneurship
 - Taking into account individual-, regional-, and national-level factors
- Based on Global Entrepreneurship Monitor (GEM) data pooled over 2001-2006
 - 16 countries, 129 regions: based on over 350,000 observations



Determinants of growth-oriented entrepreneurship from multiple spatial levels: a general overview

- Individual level
 - Human capital
 - Social capital
 - Financial Capital
- Regional level
 - Objective regional characteristics (Reynolds et al. 1994, Sternberg 2009)
 - Economic attributes
 - Demographic characteristics
 - Subjective characteristics (Davidsson 1991, Sternberg 2009)
- National level
 - Formal institutions (Van Stel et al 2007, Henrekson et al. 2010)





Determinants of regional levels of entrepreneurship

- Regional economic and demographic attributes
 - Job market opportunities, market concentration, GRP, GRP growth (e.g. Tödting & Wanzenböck 2003)
 - Unemployment (e.g. Storey 1991)
 - Agglomeration economics (Fotopoulos & Louri 2000; Rocha & Sternberg 2005)
 - Population age distribution, population growth and density
- Institutional component
 - Informal: perceptions (Grilo & Thurik 2005; Freytag & Thurik 2007; Bosma & Schutjens 2008) → national & regional level
 - Formal: regulations (Hessels et al. 2008), policy (Stevenson & Lundstrom 2001) → mostly national level





Determinants of growth-oriented entrepreneurship : our hypotheses

1. In regions where relatively many *people know someone who started a firm*, the probability of being involved in growth-oriented entrepreneurship will be *higher*
2. In regions characterised by many individuals claiming to possess the *skills to start a business*, the probability of being involved in growth-oriented entrepreneurship will be *higher*
3. In regions where relatively many people see good *opportunities to start a business*, the probability of being involved in growth-oriented entrepreneurship will be *higher*
4. In regions where relatively *few people show fear of failure* when it comes to starting a business, the probability of being involved in growth-oriented entrepreneurship will be *higher*
5. In regions with relatively *high population density*, the probability of being involved in growth-oriented entrepreneurship will be higher, especially for high-educated entrepreneurs
6. In countries with *high administrative or institutional burdens* for hiring and firing employees, the probability of being involved in growth-oriented entrepreneurship will be *lower*, especially for highly educated entrepreneurs



Data

- Global Entrepreneurship Monitor (www.gemconsortium.org)
 - Telephone interviews to representative sample of national adult population (2,000+ each year)
 - Topics:
 - Entrepreneurial activity
 - Entrepreneurial perceptions
 - Characteristics of entrepreneurial activity
 - Aggregate to *national* indicators for each year
 - See GEM Global/National Reports; Reynolds et al. (2005)
 - This and other papers: aggregate to *regional* indicators for 2001-2006
 - Indicators are weighted by age & gender for each region
 - Statistical approach → confidence intervals
 - Data at the individual level → enabling micro analyses
 - Other data sources from Eurostat, OECD, Worldbank
 - 16 countries , 129 regions (based on over 350,000 observations) - Mostly Nuts 1/2 regions

GEM measures of individual effects and regional economic/demographic effects

Variable	Description
<i>Individual effects</i>	
Gender	Male / Female
Age	Age in five age bands
Education	International Harmonized Education Level
Household income	Household income in three categories (3 tiles/country)
<i>Regional economic effects (Cambridge Econometrics database)</i>	
GRP per capita	GRP in PPS (EU=100), 2003
GRP growth	Between t-2 and t-1
Unemployment rate	Unemployed in % labour force, 2003
<i>Regional demographic effects (Eurostat Regional database)</i>	
Share 18-34 year	Share 18-34 in adult 18-64 population
Population growth	Growth total population
Population density	Number inhabitants / km ²
Education	Share with tertiary education in population



GEM measures of regional entrepreneurial culture and national institutional effects

Variable	Description
<i>Regional entrepreneurial culture</i>	
Perceived opportunities	Percentage of adult population 18-64 years perceiving good opportunities for start-ups in the region
- No fear of failure	Percentage (of those perceiving good opportunities) indicating that fear of failure would NOT prevent the respondent to set up a business
Know start-up entrepreneurs	Percentage of adult population 18-64 years knowing someone who started a business in the past two years (nascent and business owner-managers excluded)
- Perceived skills	Percentage (of those knowing a start-up entrepreneur) indicating to have knowledge & skills to start firm
<i>National institutional effects</i>	
Employment protection	OECD employment protection index

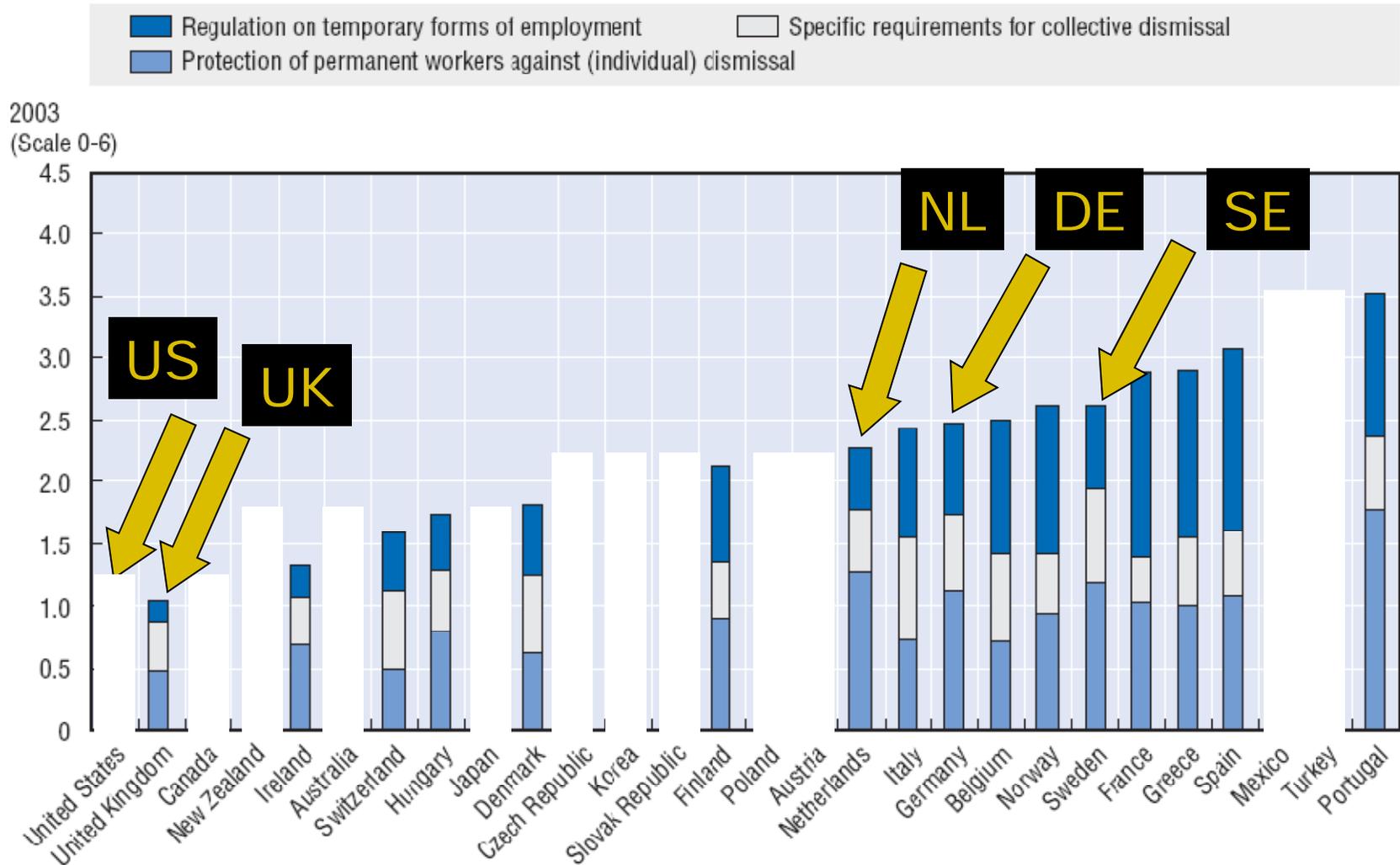




Employment protection in OECD countries

Chart 2.1. The overall summary index and its three main components

Panel A. Overall strictness of EPL in 2003 (version 2)^a





GEM measures of entrepreneurial culture and entrepreneurial activity: dependent variables

Variable	Description
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Early-stage entrepreneurial activity ESEA

Those setting up a business they will (partly) own and manage (nascents), PLUS those that currently are owner-managers of business younger than 42 months (baby business owners) (5,4%)

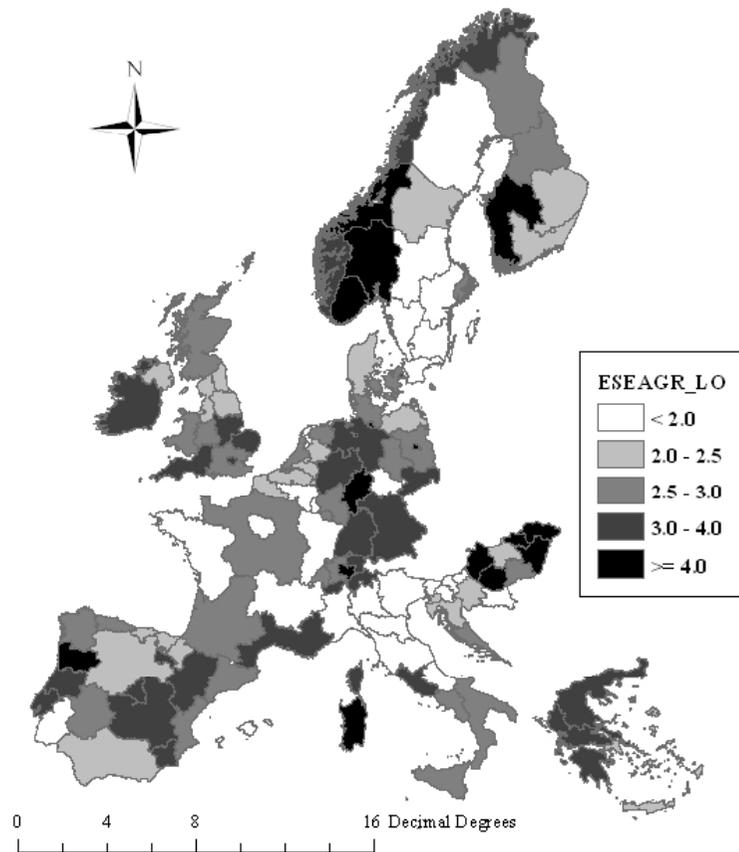
Growth oriented early-stage entrepreneurial activity ESEA

Individuals involved in early-stage entrepreneurial activity, who expect to have 10 or more employee(s) in the next five years (0,7%)

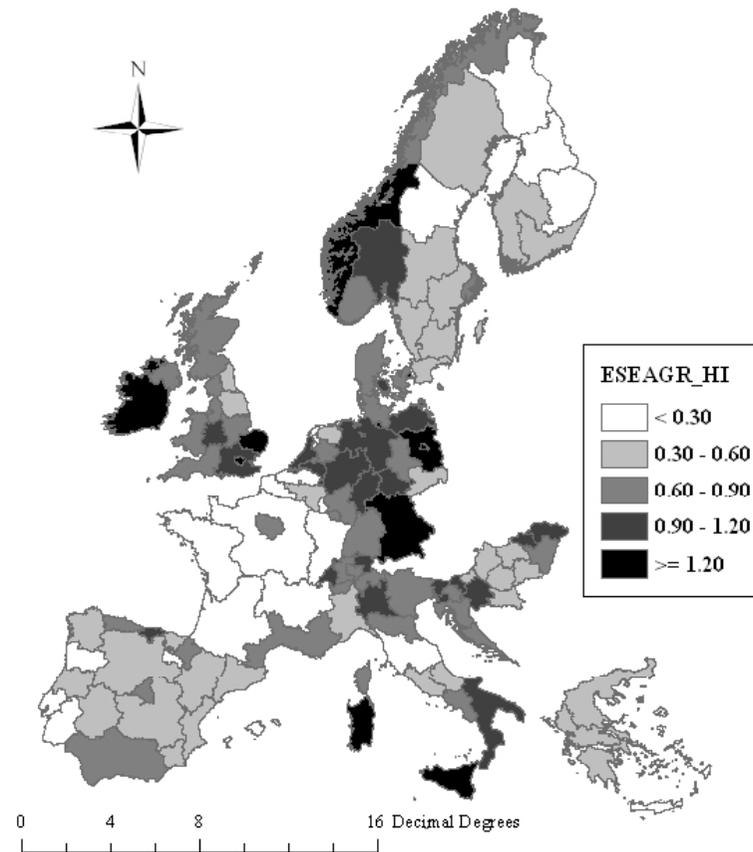


Prevalence in Entrepreneurial Activity

Total *low-growth* oriented early-stage Entrepreneurial Activity



Total *high-growth* oriented early-stage Entrepreneurial Activity



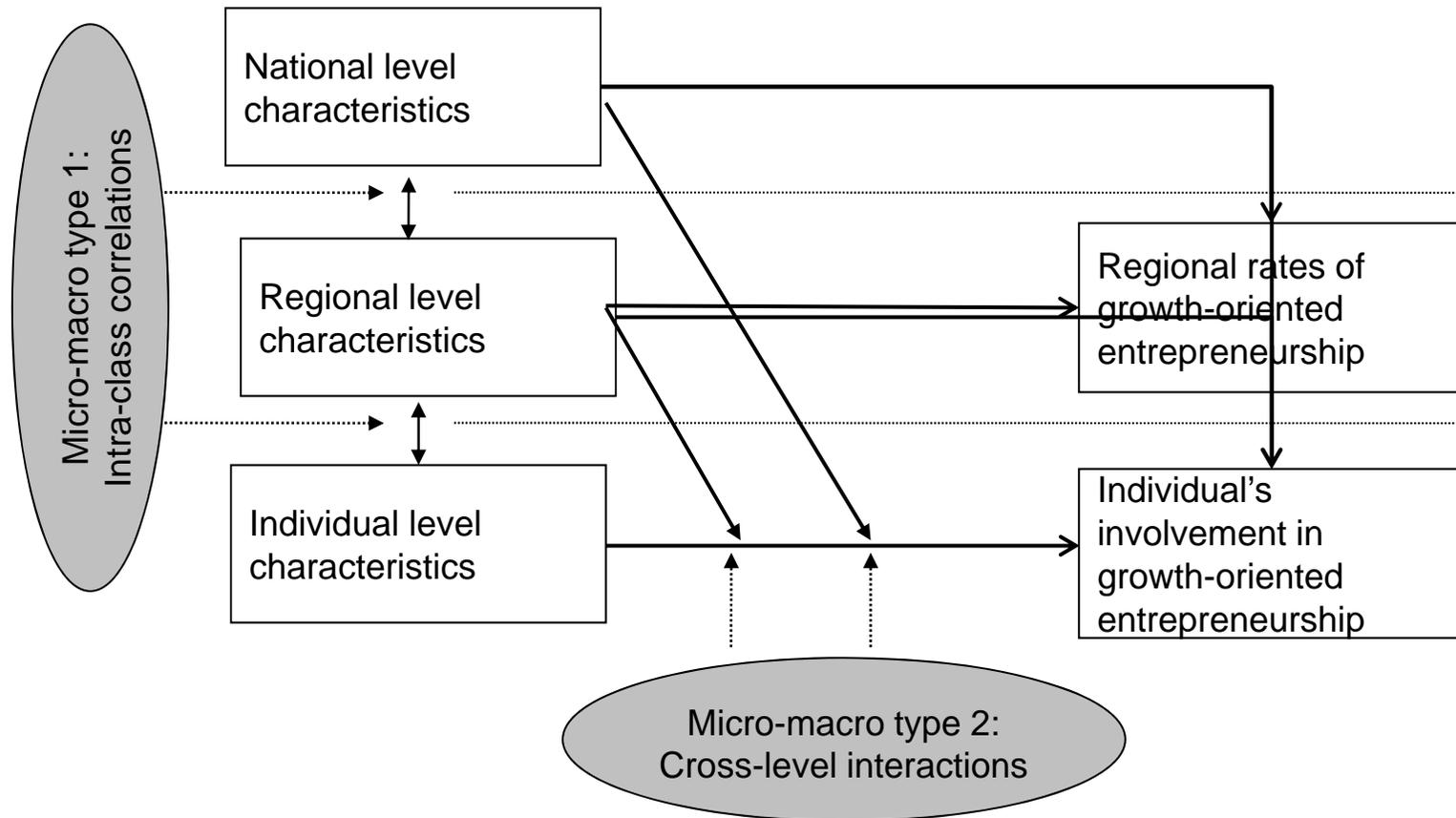


Methodology: argumentation

Probability of being involved in growth oriented early-stage entrepreneurship, multilevel analysis

- Multilevel Issue 1: regions and countries 'shape' individual behaviour (group behaviour), implying that error terms are not independent: *intra class correlation*
- Multilevel issue 2: impact of certain groups of individuals may differ between regions, according to specific regional characteristics: *cross level interactions*
- Models random intercept for regional level; ordinary logit would overestimate ('blow up') estimates & significance of regional and national variables
- Dependent: individual involved in early-stage entrepreneurship with growth ambition: aims at growing with at least 10 employees in the next five years
- Independent variables at three levels: individual, regional and national level

Methodology: illustration





Regressions: four models

1. Region-region regression: linear (multilevel), 129 regions, 16 countries
2. Region-individual regression: same as 1., with two differences:
 1. Dependent variable on individual level (357,404 observations)
 2. Logit function for determining probability to be involved in growth oriented entrepreneurship
3. Full multilevel regression: same as 2., now also controlling for individual-level determinants
4. Cross-level interactions: same as 3., including two interaction effects:
 1. Population density and education
 2. Employment protection and education



Estimation Results of Growth Orientation (1)

	Model 1: regional- regional	Model 2: regional- individual	Model 3: multilevel	Model 4: Interactions
<i>Individual effects</i>				
Age			25-44	25-44
Gender			male	male
High education			++	++
Household income			++	++
<i>Regional economic and demographic effects</i>				
GRP (+ squared)				
GRP growth	-			
Unemployment rate				
Share 18-34		++	+	
Share high education		++	+	
Population growth				
Population density	++			





Estimation Results of Growth Orientation (2)

	Model 1: regional- regional	Model 2: regional- individual	Model 3: multilevel	Model 4: Interactions
<i>Regional informal institutional effects</i>				
Know start-up entrepreneur	++			+
Perceived skills				
Perceived opportunities		++	+	+
No fear of failure				
<i>National formal institutional effects</i>				
Employment protection	--	--	--	
<i>Cross level interaction effects</i>				
Population density * education				
Employment protection * education				-- (high educated)





Conclusions (1)

- Attempt to link *regional* and *national* context to *individual* entrepreneurial behaviour and disentangling the effects
- Individual effects + age structure important to growth orientation
 - Human capital characteristics have the expected effect
 - Regional effects: urbanization effects or young and educated population?
- Impact of regional levels of attitudes to growth oriented entrepreneurship
 - Knowing other entrepreneurs or seeing opportunities?
- Employment protection deters growth oriented entrepreneurship?
 - Barrier for entrepreneurs with business growth potential to hire people
 - Barrier for employees with business growth potential to become an entrepreneur
 - Cross-level interaction with (higher) education



Conclusions (2)

- Acknowledging multilevel nature of the data leads to different sets of results
 - In particular the effect of population density requires further attention
 - Promising area for positioning GEM-based research
- Limitations & Further Research
 - Need to revisit spatial levels
 - Include more/other regional determinants: culture factors are based on *start-up* questions, not on *growth* questions
 - Heterogeneity in growth oriented early-stage entrepreneurship: nascents and baby business owners with different mechanisms (occupational choice vs growth choice). Dependent variable does not differ substantially between these two groups.



Thank you!



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