accountability 127
active firms 33–4
agency costs 12–13
agglomeration economics 53–4
economic geography 57, 62–3
positive and negative effects 77
service economies of scale and scope 55–6
agglomeration regions
evidence for higher exit 77
greater communication advantages 55–6
agglomerations and clusters 55–6
aggregate economic impact of de novo and spinout firms 107
agricultural sector, presence of negative effects on firm birth 66
analyses of firms’ sales growth descriptive statistics 145
analysis, different levels of observation 156
automobile companies, first early skepticism for 74–5
automobile industry US proximity to incumbent firms 94
average firm size in six subsectors 43
average sales size by firm age 107
bankruptcy laws 162
barriers to entry related to kind of education necessary 113
better connections for spinout firms 106
biotechnology firms, Malmö–Lund, Wennberg & Lindqvist Stockholm 58
birth rate analysis 61–2
building conditions for slow and gazelle growth 163–4
building innovative capabilities importance for gazelles 163
business R&D, presence in municipality 69
business services, common start-up 41
career choice of entrepreneurship 160
car testing facilities for extreme temperatures Arjeplog, Sweden 60
censoring data, left and right 39
classifications based on trade and accounts 52
clusters co-location in 56
exit more likely 77
leading to social and regional learning 55
lower search costs 55–6
reduction of entry barriers 55
commercial use of new knowledge economic growth driver 2
committed entrepreneurs good industry background 163
high quality education 163
personal savings 163
communication of body of knowledge 36
communications industry 13
competition and cooperation 75
among firms 56
and density 128
ecological process 54
reduction of survival chances 128
small and new firms 156
competitive advantage 125
concentrations of human capital knowledge investments in space 64
conditions across municipalities explanatory variables in empirical analysis 66
Knowledge intensive entrepreneurship

contract enforceability 19
control variables 65
selection correction 99–100
corporate entrepreneurship 9
correlation table for analyses of firms’ sales growth 146
correlation table for variables in spinout analyses 117
countries with larger firms, intrapreneurs in 157
Cox selection model coefficient prediction of firm survival 148
crowding effect, population density and market size 128
cultural environments, national culture 20
data availability 37, 9–80
demand and supply in entrepreneurial process 15–21
demand based model of firm births 69
demand conditions for entrepreneurship 1–2
demand side factors 15, 62
institutional and political environment 19–20
de novo start-ups 33, 92–117
de novo and spinout firms differences in size and legal status 104
de novo entrepreneur, definition of knowledge intensive economy 97
de novo entrepreneurs, across all subsectors percentage entered 103
density delay 78
organizational ecology 52–3
density dependence model 4, 53–4, 57, 74, 128
ecology 62–3
organizational ecology 63
dependent variable and analysis, firm births 63
dependent variables and analyses 80–81, 98–9
discrete time hazard models of firm exit
environmental conditions 83
firm characteristics 83

founder’s experience variables 83
subsector dummies 83
disk drive industry, US 94
dynamics 46
ecological conditions 66–7
density delay 51–2
red queen competition 51–2
economic geography, congestions costs 62
economic growth link with new knowledge 149
economic growth theory 151
economic sector, growth encouragement 114
economic value capturing 150–51
economic value of entrepreneurship 14–15
economic variables 123
economies of scales 13
economic downturns, decline in mature industries 52
education and schooling, human capital 17
education and self-employment 76
difference between Europe and North America 17
employee mobility, encouraging 47, 161–2
employees in six subsectors 42
employees, skilled and knowledge intensive economy 5
employment, knowledge intensive services 41–2
employment and self-employment tradition of combining 59–60
employment contracts, non-competitive clauses negative role 115
employment experience, prior, relevant knowledge 94
employment size 99
endogenous growth theory and neoclassical growth theory 27
entrepreneurial aspiration, realized growth 164
entrepreneurial experience leveraging, 162
prior experience, predictor of success 18, 8, 152–3
entrepreneurial municipalities in Sweden with high entry rate 60
entrepreneurship career choice and creative enterprise 89
entrepreneurship and endogenous growth 150–51
entrepreneurship as process 4–5 and knowledge intensive economy 6
entrepreneurship research 6–7, 46–7, 53, 76
entrepreneurship theory 3, 151
entrepreneurs in founding team part-owners 81
entries to knowledge intensive firms de novo entry of firms 44
entry by split 44
mergers of two firms 44
spinout firms 44
entry and exit rates, higher in economic booms 52
entry and exit rates, relationship between 46
entry barriers, lower 55
entry by spinout, most dominating group 44
entry process of new firms evolution and eventual exit 50
entry types and firm evolution 92
evolutionary economics congestions costs 62
evolutionary theory, importance of diversity 6
evolution of spinout and de novo firms 98
exit barriers, lower alternative employment for under-performers 56
exit by closure versus exit by merger/sale 84–8
competing hazard 86–8
exit of new entrepreneurial firms multi-level phenomenon 88
exit patterns in six subsectors 79
exits, number and types 22, 45
experience from industry 158
experimental data 36
exploitation of opportunities 12–14
external auditing 159
factors affecting birth, growth and exit of new firms 149–50
factory productivity, strong growth 77
failure of firms 75
financial performance 122
and individual exit 76
financial performance, cause and effect 153
financial services 32
financial services industry spillovers of knowledge between firms, not specific 95
firm activity periods, different 38–9
firm age effect on sales growth 138
independent legal entity 33
legitimacy 126–7
relationship with firm growth 126–8
unit of analysis, entry of firm 32–3 variable 100, 112
firm births and exits in Swedish municipalities correlations, 1994–2002 80
firm births, level variation domination of Stockholm and Malmö–Lund 70
firm density, effect on sales growth 139
firm dynamics 32–9
knowledge intensive economy 46–8
firm entries and output market 3
firm entry, challenges of study 21–2
firm entry form, de novo or spinouts effect on subsequent survival 93
firm evolution in organizational ecology 4
firm exit 74–91 challenges of study 21–2
not always failure 75
previous research on 76–7 results of findings 82–8
firm growth 118–48
study of, endogeneity 22–3
period of observation 22–3
supply side factor 15
survival and success bias 22–3
unevenness across new firms 142
Knowledge intensive entrepreneurship

firm legal status 81
firm-level analysis, multivariate analyses 108–12
firm-level descriptive analysis
entry characteristics, de novo and spinout 104–106
firm-level factors
performance and evaluation of new firms 156
firm location, near home and social network 158
firm sales and employment by age development 134
firms, birth of new, geography connection 50–73
firms, entry and exit of new initial conditions 51–4
firms exiting, by split, termination, merger 44–6
firms, fast-growing with increased turnover “gazelles” 119
firm size
average firm size in six subsectors 42–4
economies of scale 126
indicator, firm sales 125–6
protection against competitors 126
strong market position 126
firm size, disadvantages 126
firm size, multiple indicators 99
firm size variable 100
firms successful at time of liquidation 75
firm start-up
employees leaving to create a new spinout firm 47
firm’s total sales size 82
firm survival and performance
Heckman selection model 100
firms with skilled labor usage 31
fixed effects (FE) 135–6
footwear manufacturers in US exit of young plants rather than isolated plants 77
founding conditions 76–7, 82
future research, characteristics of incumbent firms 114
gazelle firms 163
gender differences in work 97
generalist firms targeting several markets 56
geographical role, firm location 158
geographic connection
importance of for entrepreneurial processes 70
geographic factors
birth of new knowledge intensive factors 69–70
geographic location and knowledge intensive economy 5
growth ambitions 119
growth and risk 122
growth motivation of entrepreneurs importance for slow growers 163
growth outcomes, and knowledge intensive economy 5
growth, pushing down prices and profits 122
growth rate distribution across segments of firm populations 122
growth rate, independence of size 126
growth, seen as “random walk” 122
hazard of termination, reduction 112
health care sector
special education needed for 113
heterogeneity
career aspirations of founders 35
entrepreneurial ability of founders 35
personal goals of founders 35
higher education
effect of 17–18
in knowledge intensive economy 7–9
high-growth firms 119
high-impact entrepreneurship 31
high level of start-ups, Arjeplog, Sweden
car testing facilities for extreme temperatures 60
high-tech manufacturing 32
highest size 43
and knowledge intensive economy 26
high-tech manufacturing firms
NEGBIN models of births 67
high-technology clusters
networks of interdependencies 56
high-technology sub-sector
higher exit rates 78
high-tech financial services 32, 41
human capital
general and specific 17–19
new knowledge 28–9
schooling and education 17
specific 18
incentives behind entrepreneurial behavior 159
incorporation of firm 159
incubators, to foster survival and growth 164
independent financiers
matching human and financial resources 13
independent start-ups (de novo start-ups)
by independent entrepreneurs 92
independent variables 63, 81–2
time invariant dummy variable 99
individual-level factors
skills and experience 156
individual level of analysis 100–101
individual's ability to convince employer 157
individual-specific information 29
individual entrepreneurs, role of in spinout firms 94
industrial agglomeration
“clusters” for firming evolution 55
new plants in, likelihood of exiting, 77
industrial associations
function in emergence of firms 62
industrial organization (I/O) economics 2, 4, 52–3, 74, 149, 150, 151
industries, geographic concentrations of
intermediation inputs into production processes 55
labor market pooling 55
spillovers of knowledge between firms 55
industry concentration and competition 123, 129, 141
industry density, high growth 143
industry features, instability 158
industry growth 129–30, 143
industry stability and instability 123, 129–30, 143
effect on sales growth 140
industry life cycle 4
industry standards, conformity to 39
industry structure
determinant of growth 21
industry versus population characteristics 151–2
inertia theory and reliability 127
influence of start-ups on growth and survival 92
information communication technologies (ICT), advanced 27
information technology increased use of
effect on size of firms 44
information technology industry 13
initiative choosing for firms 157
innovations of new firms 9, 14
innovations, radical 21
instant incident ratio (IIR) 69
integration, vertical or horizontal 99
intellectual property protection 19
interpersonal information through social environment 29
intrapreneurs, new business for employer 157
I/O economics, research in 127
job creation 118–19
of firms in knowledge-intensive sector, Sweden 119–21
and knowledge intensive economy 5
and economic growth 159
“mice” and “gazelles” distinction 119
knowledge intensive entrepreneurship

job, lower quality, in new firms 14–15
job-matching opportunities, in agglomeration 55
job-matching opportunities in clusters alternative employment availability 77
job security, poor, part-time work 12
kernel density plot empirical firm growth rate 131
KIBS firms, NEGBIN models of births 68
knowledge, as non-rival good use by others, spillovers 27
knowledge economy, rise of important change in working life 165
knowledge exploitation mode 11
knowledge fields, new 21
knowledge from prior employment 95
knowledge intensive business service (KIBS) 27, 46, 68
knowledge intensive economy 1–2, 26, 60, 97
differences among six subsectors 47–8
higher education of entrepreneurs 7–9
Swedish, growth of new firms 123, 150
knowledge intensive firms, entry and exit 44–6
knowledge intensive sector 26–49 analysis of firm dynamics 39–44
knowledge intensive services 32 size comparison with high-tech services 43
knowledge intensive start-ups in Swedish municipalities 57–8, 64
knowledge of how to use technology 28
knowledge of markets and industries spinout firms 106
knowledge spillover 47, 66–7 from existing firms 95 from universities 70
knowledge transfer patterns metal, wood and leather, Sweden 95
knowledge transfer source, spinouts 115
labor market 18
Lambda (survival correction) effect on sales growth 138
laser production, US, proximity to incumbent firms 94
legal form, choice 159
legal form of incorporation 159
legal form variable 100
legitimacy and density 128
legitimacy and survival chances increase 128
liberal/right wing majority municipalities higher likelihood of exit 89
increased numbers of firm births 89
life science industry 13
local culture, Dalarna, Sweden socioeconomic heritage of 59
localization economies 57
management implications 156–9
manufacturing economy agricultural dominance strong 78 shift to a service intensive economy 46
stagnation 40–41
market niche exploitation 94
market services, subsector dominating 41
market share 129–30
market sources, young firms 21
market stability 129–30
mean and standard deviations 108
means and standard deviation for variables in spinout analyses 116
medical device industry, US non-technological knowledge inherited 94
spillovers of knowledge between firms, not specific 95
medium-tech manufacturing, low exit rates 78
men in wage work and self-employment, analyses 97
mental models from employing organizations on ways of doing business 96
mergers of two firms, 33
microbreweries, “resources partitioning” 78
minimum efficiency scale (MES) effect on sales growth 141
minimum efficient scale or size (MES) 129
motives of individuals for entrepreneurship in knowledge economy 165
multi-disciplinary field of entrepreneurship 36
multi-level phenomenon of new firm exit 88
multinational firms, and many SMEs Finland, the Netherlands, Sweden 118
multivariate analyses 110–11, 134–42, 156
multi-level nature of entrepreneurial processes 153
municipalities in Sweden, highest level entry rates 59
municipalities, liberal/right wing majority
competition encouragers 161
firm births increased in 160
firms more likely to exit 160
natural selection forces 54
negative spillovers 77
new firm formation in Sweden, geographic variation 58–61
new firm growth 7, 118–19
importance of 124–5
new firms as replications, marginal variations 30
new firms, entrepreneurial process 1, 28
new knowledge creation
setting up of new firms 29
new ventures, heterogeneity of 30
Norway, the Netherlands, Sweden high ranking in entrepreneurship 157
open source software firms advanced services, network administration 28
opportunity, economic value 11–12
opportunity sources and exploitation 9–14
ordinary least square (OLS) 135–6
organizational inertia 54
“organizational connection” between new firms 92
organizational density 52
organizational ecology 2–3, 57
and industrial organization economics 54
organizational heritage investigation
Danish firms 93
previous research 94
organizational theorists, on transfer of routines 96
organization ecology 57, 74, 151
output markets, competition for 3
outsourcing of work, effect on size of firms 44
overlaps and conflicts 53–4
ownership separate from employment, 37
panel data methods, firms evolving over time 144
panel data, structure of, longitudinal data 37–9
Panel Study of Entrepreneurial Dynamics (PSED) 30
path dependency, strong in firm births 71
performance 155
performance and evaluation of new firms 98
Ph.D.s number of 100
industries higher in 112
policy framework, different for different aims 163
policy implications 143–4
policy measures, firms’ reaction to 159
political government structure, Sweden change in start-up rate 57–8
population density 123, 128
population, descriptive statistics 133–4
population ecological research, firm births 70
population ecologists, on transfer of routines 96
population ecology, research 123, 127
potential entrepreneurship acquisition and assimilation of new ideas 157
power distance, national culture 20
predictor variables for firm exit 85
price competition 5
prior entrepreneurial experience
increase in probability of selling 89
prior knowledge, advantage 106
probability of survival, spinout rather
than de novo 96
product life cycle 52–3
profitability for growth 124
profit maximization 158
as driving motivation for firms 54
objective for entrepreneurship 155
profits and growth, positive
relationship
Swedish and Australian firms 122
profits and growth, weaker
relationship, French firms 122
profits and survival and growth,
relationships between
quantile regression approach 121–5
profits, relationship with firm growth
142
proportion of spinouts to de novo
entrants 103
psychological make-up and self-
employment 76
public policy discussions 160
public policy focus
promoting quality rather than
numbers 162
public policy implications 159–64
public sector size 161
quantile regression (QR) 122, 135–6,
143
R&D 14
firms with high rates of 31
radical projects, large firms not
favoring 158
random effect regression 99
rapid-growth firms 119
reasons for selling off firms 85
regional agglomeration of industries
53
regional control variables 82
regional economic size (GRP) 161
regional knowledge accumulation
in industrial districts literature 57
regional learning 57–8
regulatory regime discussion
high turnover in entries and exits
160–61
rents for returns on investment 122
research areas 21
sharing ties to 56
in theoretical perspectives 36
research design and data 79–82
research efforts, future 164–5
research on institutional change 114
resources partitioning 55–7, 78
restarts, small micro firms 34
returns on assets (ROA) generous
profit measure 125
risk attitude for entrepreneurship 19
risk avoidance, national culture 20
riskiness of entrepreneurship 18
risk reduction 125
risky projects, large firms not favoring
158
rubber industry US, proximity to
incumbent firms 94
sales and employment size 112
sales, effect on sales growth 137
selection variable “Lambda” 100
self-employed
highly skilled or not 165
number in firm 1994–2002 101
percentage in economic sector 102
self-employment 97
choice 113
for entrepreneurs, reasons for 9
flexible employment alternative 8–9
job satisfaction 8–9
supply side factor 15
self-selection into entrepreneurship
153–4
search costs, decrease 55
service based economy shift 165
service industries 26–7
size differences in firms 43–4
size distribution
of firms in knowledge-intensive
sector, Sweden 119
size distribution for new firms by age
1990–2002, 119–21
size distribution in number of
employees
for genuinely new firms by age 147
Index

size evolution by age, in sales and employment 133
skilled labor, access to 21
skill in running business 164
small and medium-sized companies (SMEs)
new jobs in majority, in Norway 118
small and new firms, and competitive forces 7
small firms with few individuals, “mice”
hiring many each year 119
Smith, Adam
statement on labor of manufacturer 26
social context in work
young employees and entrepreneurship 13
social environment
effect on entrepreneurship opportunities 20
social learning 57–8
social networks of individuals
role in spreading entrepreneurial efforts 71
social ties, trusted 126
societal costs of entrepreneurial failure 162
socioeconomic legitimacy
facilitation of firm births 62
sociogeographic factors in firm exit 77
sociological variables
demand side factors 63
software manufacturers
resources partitioning 78
sole proprietors, exclusion of part-time firms 80
specialism versus variety in work experience 18
specialist firms targeting market niche 56
spillovers 47
spinoff start-ups 92
spinout entrepreneur across all subsectors
percentage entered 103
definition of
knowledge intensive economy 97
spinout firms 33
from incumbent firms 92
spinouts and de novo
characteristics at entry, differences 112
performance differences 112
probability of survival, differences 112
spinouts in Danish manufacturing sector
vitality of parent company 95
spinout start-ups 92–117
spread of legitimacy with number of entrants 75
start-up behavior
in dense populations 70
start-up rate, annual
knowledge intensive firms in Sweden 58
start-ups, high level of, in smaller rural municipalities 70
Statistics Sweden 98
classification of entry to firms codes for exit 80
four categories, 44
LISA, RAMS, longitudinal databases
yearly data on all firms in Sweden 30
register data 47
statistics for entry status 105
Stockholm, Sweden knowledge intensive start-ups 58
stock of firms 39–40
relative for six sectors 40
strategic management 74
research in 94
strategy management, research in 127
suboptimal scale, preference for 126
success bias 153–4
supply side factors 15–16, 64
income 19
self-employment, firm growth 15
unemployment 19
supply side sources 55
survival increase with age 127
survival of de novo and spinout firms 106
survival rates by firm age for cohort, 1994–97 106
survival selection 153–4
Sweden, 157
knowledge intensive start-ups in Sweden 57–8
Sweden, high-quality micro data 2
targeting people with strong proven competencies 161–2
taxation 19-20
tax rate lowering for new firms 160
technological changes 28
leading to increased growth 27
technological discoveries 27
technological know-how of spinout firms
positive effect 94
technological knowledge, commercialization of 1
technological knowledge and economic growth 26, 28
technological spillovers
mobility of skilled employees between firms 28
technology, definition of 48
technology, new 11
theoretical model, importance of 36
theoretical models, observational data 149
theories 149
total sales size 100
trade unions, function in emergence of firms 62
transaction costs reduction 55–6
types of firms 103
unemployment 12
unemployment, not good motive 162
university R&D variable 65
unobserved heterogeneity
serious threat to causality, empirical research 35–6
urban economies, large industrial and occupation diversity 61
utility increasing 158
value of previous experience 158
variable for current density 82
variables, definition of 125, 132–3
variation focus 6
venture capital industry matching human and financial resources 13
wealth creation, encouraging 161
wealth creation, individual objective for entrepreneurship 155
women's entrepreneurship entrepreneurial motivations 39
entry processes 39
workers with university education variable 65
work experience, diverse
value in entrepreneurship 18
work-life conditions in countries 165